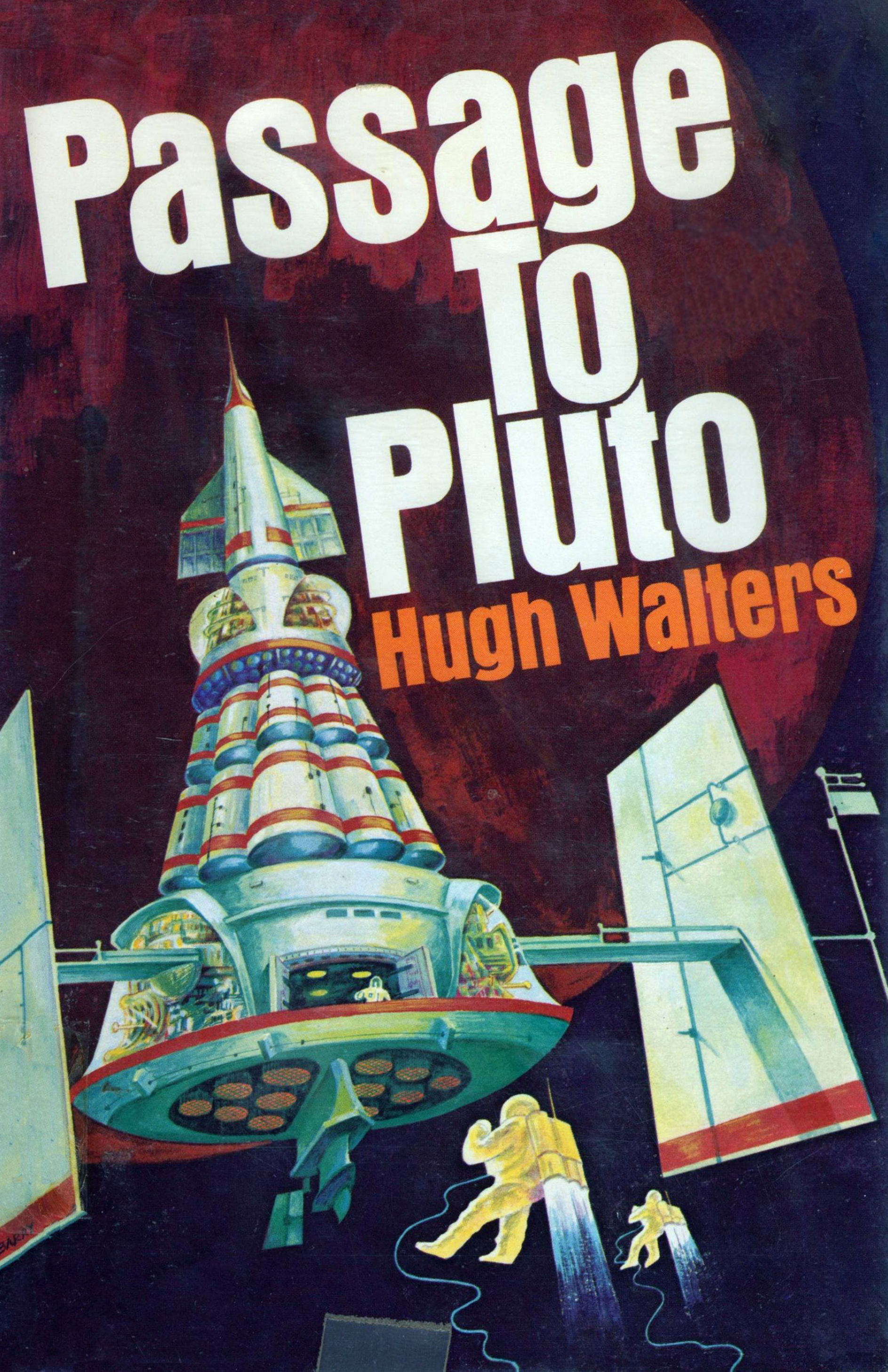
Passage To Pluto

Hugh Walters



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Also by Hugh Walters

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Passage to PLUTO

by Hugh Walters

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THOMAS NELSON INC., PUBLISHERS
Nashville
New York

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First U.S. edition

Library of Congress Cataloging in Publication Data
Walters, Hugh.
Passage to Pluto.
SUMMARY: Three astronauts on a space flight to Pluto encounter a huge mass that pulls the spaceship toward it with a murderous attraction.
[1. Science fiction. 2. Space flight—Fiction] I. Title.
PZ7.W1715Pas5 [Fic] 75-15913
ISBN 0-8407-6457-X

Passage to PLUTO

1

"Pluto, as you know, is the last of our solar planets to be explored," Sir Billy Gillanders was saying to the three astronauts. "It is the most distant planet, as far we know, in our solar system. Its average distance from the sun is no less than three and two-thirds billion miles—just about twice as far as Uranus, four times as far as Saturn, and eight time as distant as Jupiter."

"Gosh!" exclaimed Tony Hale, the mechanic, "it must be awfully cold."

"Why do you say as far as we know?" asked Morrison Kant, the leader of the little group.

"To answer Tony first," Sir Billy said, "I can tell you it is cold, very cold. We estimate the surface temperature as about minus four hundred degrees Fahrenheit, and that makes it the coldest planet of the lot. Now as to Morrey's question. As you know, Pluto was discovered way back in 1930. Its presence had been suspected for several years, because accurate measurements of the orbits of Uranus and Neptune had revealed slight irregularities. These could have been caused only by the attraction of a still more distant planet. Pluto was finally located in January 1930, by an astronomer named Tombaugh. Recently astronomers working at Lunar City have observed a tiny deviation in the orbit of Pluto itself."

Lunar City, the fast-growing settlement on the moon, was familiar to the astronauts. All three had been there many times. Indeed, they had helped with the first permanent structures, even before the observatory had been established.

The observatory at Lunar City had originally been the main reason for men's making their homes on Earth's satellite. With perfect viewing conditions and without the clouding effect that is produced by even the clearest atmosphere, it had been able to do things no terrestrial observatory could attempt. Its great telescopes, far larger than could be constructed under earthly gravity, peered into the farthest reaches of the universe. Its radio telescopes were infinitely more sensitive than the most refined instrument that had to suffer the filtering effect of Earth's atmosphere.

Working under these ideal conditions, the men at the Lunar observatory had measured the minute perturbation in Pluto's orbit, and had predicted that yet another solar planet lay beyond. As to its size they could say nothing. Not even the most powerful optical telescope had been able to locate this mysterious object.

"One of your main objectives," Sir Billy went on, "will be to discover Planet X, as some people are now calling it. You might even get an opportunity to take a close look."

"That's if it's there," Tony said.

"Oh, it's there all right," Sir Billy assured them, "or at least something is there. The mathematicians can almost pinpoint the spot, but the optical observers are foxed. They maintain that is must be incredibly small. Certainly it can be only a fraction of the size of our moon."

Sir William H. R. G. Gillanders was the director of the United Nations Exploration Agency—UNEXA for short —which was the organization responsible for the exploration of the universe. Over the years UNEXA had built up a team of intrepid young men and women who were willing to venture anywhere in the solar system. Because all nations now worked together in space research, the teams were usually international in character.

The team to which the director was now talking certainly was. Morrey Kant, its leader, was a tall, broad-shouldered American with a crew cut. Tony Hale, the mechanic, was a cheerful, freckled Englishman, a Cockney, and a slight, dark Russian, Serge Smyslov, completed the trio.

These were the three young men who had been chosen for UNEXA's next venture into the unknown, a journey out to Pluto and perhaps beyond. But the proposed expedition was not only intended to discover more about the sun's most distant planet and to try to find out if there really was a Planet X; it was also to try out an entirely new method of propulsion.

Originally spaceships had been powered by chemical motors. Various combinations of fuels and oxidants had been tried, but eventually liquid hydrogen and liquid oxygen had been generally accepted. Then had come atomic motors, in which cesium had been converted into ions to obtain thrust. Unfortunately, though an atomic motor could function over very long periods, its thrust was weak, being in the order of one fourth G (Earth gravity, about 32 feet per second for a free-falling body).

No atomic motor had ever been sufficiently powerful to lift a spaceship either from the Earth's surface or from the moon's. Thus a chemical motor was still required for lift-off and to reach escape velocity. Then the atomic motor took over, and because of its long operational period, it was able to build up high speeds in spite of its weak thrust.

Now a new type of atomic motor had been developed that could not only lift the spaceship off the Earth, but could also build up high velocities in a fraction of the time taken by the old type. In effect the new type of propulsion was a small, controlled and continuous atomic explosion, so that the lift-off would not be too uncomfortable for the astronauts.

Because of the possible dangers from the use of atomic fuel, these launchings had to take place on an isolated island in the Indian Ocean. This island, called Gan, in the Maldive Archipelago, had formerly been a staging area operated by the British Royal Air Force. There were a few small surrounding islands from which the inhabitants had been evacuated, and which were now occupied solely by the launch teams. The Maldive Archipelago had been completely taken over by UNEXA, and many of its personnel had been transferred there from Cape Canaveral. The actual control room for the launching was on a little island about four miles from Gan, which was far enough away to protect it from the small amount of fallout generated by the new-style atomic motors.

In a few weeks' time, when the briefing and training were complete, Morrey, Serge, and Tony would be flown out to the launch station to await the final countdown, Meanwhile there was much they had to learn about their objective.

"How long will the trip last?" Serge inquired. "A year?"

"Good gracious, no." The director smiled. "As I said, the average distance of Pluto from the sun is three and two-thirds billion miles. Yet, because its orbit is the most eccentric of all the sun's family, at times it is actually nearer the Earth than Neptune. The flight path your ship will take will be over four billion miles long, because it is a curved one. That should take you about two weeks."

"What?!" exploded the three astronauts together. Was the director serious? They would have expected the journey to take at least six months.

"I thought that would surprise you." Sir Billy laughed. "This new method of propulsion, though it won't help much to break out of the solar system, will at least bring all our own planets very much nearer."

"But two weeks!" exclaimed Tony. "Why, we won't need hypothermia."

"Oh, but you will," Sir Billy explained. "It will be necessary to put you all to sleep even before takeoff. The forces on your bodies would cause you to lose consciousness, anyway."

Hypothermia, a process first used in surgery, consisted of lowering the body temperature till all signs of life had virtually disappeared. A tiny instrument inserted under the skin and connected to a nerve ensured that the heart remained alive. By slowly raising the body temperature the astronaut could be restored to consciousness without being aware of any lapse of time.

The team began to discuss what the director had told them. Their ship, it seemed, would be able to travel the four-billion-mile curved path to Pluto in the incredible time of two weeks! Serge did some rapid calculations.

"Why, that will mean an average velocity of nearly twelve million miles an hour," he spluttered.

"Just about," agreed Sir Billy calmly. "We have already sent a capsule around the sun and back in under a day. Of course, we have still a long way to go before we approach the speed of light. Someday, perhaps, we'll do even that."

"So what is our flight program?" Morrey asked.

"You'll enter your ship, be put to sleep, and be aroused about two weeks later as you approach Pluto.

There you will go into orbit and make what discoveries you can. After completing your task you will break orbit, undergo hypothermia, and wake up here on Earth."

"Then we'll be hardly more than cargo," Tony protested.

"Not at all," the director assured him. "You will have plenty to do when you are in orbit around Pluto, though I'll grant you that your outward and return journeys will be controlled entirely by us. Remember we've never tried this new propulsion with humans before, so—and I must warn you of this—there will be a considerable element of danger. When you are in orbit around Pluto, there will be a very full program for you, including a search for Planet X. If you find it, you may have to visit your discovery to have a closer look."

"Oh, we're not grumbling," Morrey assured him hastily. "But the whole program will be so strange compared with anything we've done before. I only wish Chris could be with us."

He was referring to Chris Godfrey, Sir Billy's young deputy, who had recently been promoted from being a leading astronaut. Chris's friends suspected that the new deputy director regarded his elevation with mixed feelings. It was an honor, of course, to have such a responsible position, but it meant that he would no longer be able to lead space expeditions like this one.

"By the way, where is Chris?" Tony asked.

"He's out at Gan supervising the final assembly of your ship," Sir Billy told them. "I expect him home for a spell of leave at the end of this week."

2

When Chris was in London he always stayed with his friends in their apartment just off Russell Square. He had hardly unpacked after his arrival when Tony began to ask him about the expedition.

Chris hesitated. He was secretly worried about the new means of propulsion. He knew that someone, sooner or later, would have to test it, but he was reluctant to let his friends take the risk.

"I can't see any fault in your ship, Pluto One," he said. "We are sure it will function perfectly. The back-up ship, Pluto Two, which we are also completing, should be unnecessary. What does worry us a bit is something different—the strange effect of traveling at such a high velocity. At least—we can't be quite certain about it. But we've noticed something unusual in probes that we've sent out to test the new propulsion."

"Probes? I thought only one had been sent," Morrey said.

"Officially that's correct," Chris admitted, "but actually we've sent three. We haven't reported the other two because we wanted to study the results carefully. All three show this peculiar effect."

"Come on, Chris. What is it?" Tony pressed him.

"It seems to be some sort of 'time-slip.' I can't describe it any better than that. In the first probe—the one you know about—we sent a number of instruments and also biological specimens. The capsule went around the sun and back, a total journey verging on two hundred million miles. We recovered it safely and examined the contents. Three chronometers had each lost nineteen minutes.

"The peculiar thing about it was that each of the three had lost exactly the same amount of time. They were carefully checked, of course, and were found to be functioning perfectly. Then there was the strange behavior of some of the biological specimens. We sent up cultures of different bacteria, each of which had a very short reproductive cycle. One strain reproduces itself every two minutes, another every seven minutes. When we examined them we found several generations missing after the voyage. A careful analysis again pointed to a loss of nineteen minutes in their lives."

"I don't exactly follow you, Chris," Tony complained. "What does all this mean?"

"We weren't sure. Hence the decision to send up two more probes. That also explains why we didn't give them any publicity. You see—we still didn't know exactly what we were looking for. However, the second and third probes confirmed this strange time-slip. We sent them on different trajectories out into space, the last one covering over three hundred million miles in little over twenty-five hours.

"On the last experiment the time-slip was over half an hour. We had included in the payload a special clock that works on the vibratory period of certain crystals. It's impossible to tamper with the clock, and it is incredibly accurate. Yet this, too, indicated a difference in time between the returned capsule and ourselves."

"But how can the time be different?" Tony persisted.

"Time is time, whether it's here or out in space. If it took twenty-five hours for the last capsule to complete its journey, then twenty-five hours it was—not twenty-four and a half."

"All the evidence shows that inside the capsule only twenty-four and a half hours had elapsed," Chris said quietly.

"Then if that is true, what is the explanation?" Serge wanted to know.

"The mathematics boys are still working on it. Briefly their theory is that this peculiar behavior of time is caused by the high velocity. I know it sounds crazy, but they believe that if you could travel at the same speed as light, time would stand still," Chris explained.

Morrey snorted.

"I suppose they will tell us that if we could move faster than light, time would move backward?" he said sarcastically.

"Something like that," Chris agreed surprisingly. "They say that if you could look at Earth from a telescope in a spaceship traveling faster than light, all events would appear in reverse. It would be like running a film through the projector backward."

"Chris, how do you think the time-slip will affect us on the Pluto expedition?" asked Morrey.

"That I don't know for certain," Chris explained. "I'll let you in on a secret. I've been detached from routine work to pursue this investigation. Not until we get you back safely will we know how it affects humans."

"If we get time-slip on our trip, what will it amount to?" Serge inquired.

"Judging by the distance of the probes and the time they have lost, I guess you will lose anything up to twelve hours," Chris replied.

"I can't accept that," Tony declared. "I can't believe that when we get back, our time will be any different from yours. How could we possibly be twelve hours out of step with you?"

"It is because you will have traveled at a measurable fraction of the speed of light," Chris explained patiently. "It hasn't been possible to reach anything like this velocity before. Therefore the time-slip effect has been so small as to be unnoticeable. It must, of course, have occurred, but it hasn't come to our attention."

"Is time-slip harmful?" Tony wanted to know.

"I shouldn't think so," Chris replied with a smile. "Unless you think that gaining twelve hours more life is harmful."

Three days later Chris returned to Gan, and the astronauts had to get down to some really hard work. Every day there were strenuous physical exercises, followed by a careful medical check. Then there were long hours of instruction about all that was known of Pluto and its environs. Photographs taken from the airless moon were studied and memorized. The star pattern was pored over until it was as familiar to the trio as each other's faces. There was even a short visit to Lunar City so that they could peer for themselves through the giant telescope at their objective.

At last the time came when Sir Billy told them to pack their bags, not forgetting to include tropical clothes. They were to fly out to the Maldives in two days. That left them just time to pay farewell visits to two old friends, George Benson and "Whiskers" Greatrex.

Lord Benson had been Sir Billy's predecessor as director of UNEXA until illness struck him down. Now, though he was confined to a wheelchair, he still took an active interest in all space projects, and the astronauts told him all about the forthcoming voyage. They mentioned the peculiar time-slip effect that Chris had told them about, and to their surprise the old scientist just smiled and nodded his head.

"I expected it," he told them, "and I don't think it's anything to worry about. In my day we couldn't reach the velocity necessary to make any noticeable change. Today you are on the threshold of fantastic speeds, and this time-slip will become more and more evident."

"I still don't understand it." Tony sighed.

"Well," Lord Benson said, "try to imagine time rushing past you in all directions at the speed of light—one hundred eighty-six thousand miles per second. Now if you can travel at, say, one sixtieth of the speed of light, in any one minute only fifty-nine seconds of time, or light, will have passed by you, because you yourself will have traveled that other sixtieth."

"So if you could travel at the same speed as light, you would be keeping up with time, so that it would appear to stand still?" asked Serge.

"That's the theory of it," Lord Benson agreed.

Next morning Morrey drove his two friends out to the half-timbered cottage between Aylesbury and Wendover where "Whiskers" Greatrex lived with his wife, Mary. Whiskers still sported the huge moustache that he had retained since his days as a fighter pilot in the Royal Air Force. But today it was almost white—a contrast to the bristling ginger moustache he'd had when the astronauts first knew him.

The former wing commander had worked with the three young men—and Chris—when they had been preparing for their first exploits. He'd been their guide, philosopher, and friend, even their nursemaid, during the difficult periods of their training. He'd been their help and support during the nerve-racking waits for blast-off. His cheery banter over the radio had sustained them during the boredom of long voyages. He had been the one to encourage them during their many periods of danger.

He plied them with questions about their new mission, and underneath his probing they could detect an air of wistfulness that he was no longer able to play a part.

"Oh, I knew Gan well," he said. "In my RAF days I was stationed there for a year. The sea is marvelous, but be sure always to wear canvas shoes. If you cut your foot on the coral it can be really serious."

As the time approached for Morrey and the others to take their leave, Whiskers became more and more preoccupied. They could see that he would miss them a great deal.

"You really must be careful when you are at Gan," he said haltingly. "You could jeopardize the whole undertaking by carelessness. I knew one fellow who had to have a foot amputated because he was careless at the beach.

"I thought you said it was wonderful out there if you took the proper precautions," Tony pointed out.

"Oh, I did—and it is," Whiskers agreed. "But young men in your position should be especially careful."

"You mean—we should have someone to look after us?" suggested Morrey with a grin.

"And why not?" roared their friend. "You never got into any trouble under my care."

"Aren't you getting a bit old for that job?" Serge asked innocently. The minute he'd made his remark he regretted it. Though it had been meant as a joke, Whiskers looked very hurt.

"Sorry, I didn't mean that," Serge assured him hastily, and the others did their best to restore his spirits.

But it was in vain. He didn't cheer up in spite of their combined efforts. It was a poor way of repaying his hospitality, and they all three felt miserable about it.

"Well, good-bye, and look after yourselves," Whiskers said sadly as he shook their hands. Never had they seen him so depressed.

"Look, Whiskers," Morrey said desperately as he opened his car door to climb inside, "I'll ask Sir Billy to sign you on."

Whiskers shook his head sadly. "Don't bother," he said. "It's true, I am too old."

There was a telltale hoarseness in his voice. Unable to watch his friend's distress any longer, Morrey started up his car and let in the clutch. Tony and Serge waved frantically as they drew away. Whiskers, despair evident in his sagging figure, waved back until they were out of sight. Then a complete change came over him. He straightened his shoulders and marched cheerfully into the house.

"Mary, can you do without me for a few months?" he asked brightly.

Mrs. Greatrex looked at her husband in astonishment.

"What's all this?" she asked. "You haven't been invited to join the expedition, have you?"

"No," grinned the wily Whiskers, "but I think I've played my cards right to get roped in. You know how good I used to be at amateur shows."

Sure enough, a couple of days later a telegram arrived. It read: "Can you be available for three months? Tropical clothes necessary. Billy."

Whiskers patted his case fondly. It had been packed for more than twenty-four hours.

3

The little spot on the map that was the island of Gan was surrounded by a ring of equally small spots. On these islands lived the scientists and engineers who were assembling the Pluto rocket and her sister ship. Each day a fleet of fast motor launches would carry them from the living quarters to Gan. In the evening the launches would bring in another batch, the night shift, and take the day workers back to their own islands.

Chris Godfrey and several of the other top scientists were housed in long, low bungalows on an island called Hitaddu, just eight miles from the firing base. They were looked after by a crowd of Maldivians, to whom the rocket station had brought employment and prosperity. Chris's particular helper was a cheerful youth named Kari.

There were no regular buildings on Gan. All the former RAF quarters had been bulldozed, and now the island was pitted with deep underground bunkers. On the morning after his return, Chris made his way to the largest bunker, which was a miniature control center. The real center was much larger and situated on another island called Wilingili, well out of the way if a catastrophe should occur. Before Chris went down the sloping ramp to the underground room, he paused and looked toward the two new-type rockets.

Pluto One and Two were more than a mile away, on the southern tip of the island. It didn't seem anything like that distance in the clear warm air. There were no buildings in between, nothing by which to judge the enormous size of these two titanium monsters. Chris was, naturally, quite accustomed to their appearance by now. But his three friends, who had only been used to conventional rockets, would have a shock when they saw them.

Instead of standing on a flat launching pad, these two ships were perched on vast pyramids of concrete. Each pyramid was over two hundred feet high, and their bases were one hundred feet square. The rockets themselves appeared to be only about a hundred feet tall, but this was because another hundred and fifty feet stood in a well, inside the pyramids. The effect was as if a modern polished obelisk had been planted on top of an ancient Egyptian monument.

The ship would be launched by means of a miniature atomic explosion in the heart of the pyramid. Pluto One would be thrust upward from the cavity in the pyramid almost as a shell is fired from a gun. But because of the deadly nature of the explosion, it had to be confined within the massive concrete structure.

Neon-tube lighting at the entrance to the tunnel minimized the transition from daylight. Chris walked along the central corridor, from which opened a number of doors. His own office was the last one on the left before the double doors leading into the underground control room itself. On the door was a plate reading "Mr. C. J. Godfrey, Deputy Director." Right opposite was Sir Billy's office.

Chris always entered his office with mixed feelings. He hadn't yet got used to the idea that he was now earthbound—tied to a desk instead of a contour couch. He was proud of his position, and excited about the part he would be playing in future space planning. But it would be only as an administrator and not as an active participant. Sometimes he wished he'd never accepted the post, though of course he realized that his space flights must come to an end some time.

He entered the air-conditioned office with its artificial daylight. In the center was his desk, which looked not unlike the console of an organ. There were only a few square feet of flat writing space. The rest was made up of row upon row of different-colored switches. In the center of the wall facing the desk, opposite the door, was a large television screen. This was surrounded by about a dozen smaller ones.

As he looked Chris could see a scene of activity on each of the smaller screens. Most showed the work on the two spaceships. Two showed the control room next door. By a flick of one of the many switches on his desk Chris could transfer any of these scenes onto the large screen so that he could see in detail just what was going on. He spent the next hour "visiting" all parts of the establishment and bringing himself up to date with progress reports.

The sun was climbing high when Chris again emerged from the Gan control. As he stepped out of the shade of the entrance tunnel, the heat and glare struck him almost like a physical blow. All the Europeans on the islands wore dark glasses, though of course the Maldivians roared with laughter at the thought of wearing them. Small trickles of perspiration began to run down Chris's face as he waited for a jeep to take him on an inspection of the two ships. Soon the vehicle slithered to a halt beside him, and Tutu, the Maldivian driver, greeted him enthusiastically. They drove to the entrance to another underground bunker less than a quarter of a mile from the two concrete mountains.

The bunker that Chris now entered was unlike the one that housed the firing control. It was devoted entirely to storing special clothing, and monitoring radiation. Because the two spaceships were to be propelled by controlled atomic explosions, great precautions had to be taken against possible contamination. No one was allowed to go nearer to the ships than this bunker unless he wore special protective clothing. Many of the technicians had grumbled about this rule because the clothing impeded them, but it was rigidly enforced.

With the help of two dressers, Chris was soon ready. He could sympathize with the technicians, for although the suits were specially designed for flexibility, they did restrict movement somewhat. Special arrangements had to be made when delicate instruments were being examined in the ships. The technicians used mechanical hands that could work far more gently than human ones.

Because of the danger of radiation and the difficulties of arranging for adequate protection, the nuclear fuel was not inserted into the spaceship until the latest possible moment. Pluto One had received its fuel, but Pluto Two wouldn't get any unless it became necessary to launch. It was toward the ship destined to carry his friends that Chris made his way.

Up one side of the concrete pyramid ran a kind of cliff railway, such as is seen in many seaside resorts. At intervals in the sloping concrete side, there were openings leading to the interior of the pyramid. These permitted the engineers to work on the lower part of the ship, that section which nestled within the pyramid itself—the part holding the dangerous nuclear fuel. Chris stopped the railcar at the lowest opening and went in.

The tunnel ran through many yards of solid concrete before it came to an end. And there, right in the heart of the pyramid, was the nuclear rocket.

Not much of it could be seen from the tunnel. The chamber into which Chris stepped was about twenty feet in diameter and half that in height. It was difficult to stand inside, for the chamber floor was a mass of complicated machinery, shining in the brilliant light that flooded everywhere. Below this chamber floor, Chris knew, was the nuclear fuel, and this machinery at which he was now looking controlled its use.

This was perhaps the most vital and novel part of the spaceship. Other sections were more conventional and differed little from many kinds of ship in use. The gleaming rods, cylinders, and tubes in this compartment fed the nuclear fuel rods into the explosion chamber at the base of the rocket. Because of the extreme accuracy with which the explosions had to be controlled, this machinery was the most important on the whole vessel.

It was frightening to think that too much or too little nuclear fuel could lead to disaster, and the margin between the two was very small indeed. Little wonder, then, that Chris's first interest was in this compartment, for unless this machinery functioned perfectly, all else would be lost.

There were two hooded figures squeezed in among the machinery. Each had his name in large letters across his back and chest, so Chris was able to identify two of the cleverest technicians at the firing base. Obviously they were making still another check that the equipment had been installed correctly and was functioning properly. The muffled sound of their conversation told him that they were quite satisfied. He asked what they were doing.

"Just one of the rods sticking a bit," one of the technicians replied. "We took it out, tested it, and found it was two tenths out of line."

Two tenths meant two tenths of a thousandth part of an inch, but even a deviation as small as this could cause trouble, so great was the degree of perfection required.

"What did you do? Have it straightened?" asked the deputy director.

"No. We scrapped it," the other man replied, and Chris nodded approvingly. Even though it would have been quite possible to remove such a small amount of distortion from the offending connecting rod, the process might conceivably cause a slight weakness in the metal, and this was a risk that no one was prepared to take.

"What about the fuel?" Chris asked.

"Behaving perfectly. Only ten degrees' rise," he was told.

Chris again nodded approvingly. If the temperature in the fuel compartment had risen too much after the nuclear fuel was loaded, it would have indicated trouble. Ten degrees was well below the permitted maximum. Answers to his other questions were equally satisfactory, so he continued his inspection of the ship.

It was about half an hour later that he came to the crews' quarters. He stepped inside with a feeling of envy that he tried hard to suppress.

What were the chances of throwing up everything to go on the Pluto expedition? For a moment his thoughts raced madly. Then, with a sigh, Chris thrust the notion away from him. There was too much at stake to change the pattern of the expedition now.

He spent some time closely examining the cabin. The layout was very similar to that with which he was familiar from his own space voyages. One important variation, however, was a panel of switches controlling the mechanism above the fuel comparement. Though all operations would be either automatic or controlled from the ground, UNEXA's policy was to provide for manual operation by the crew as a last resort. Of course, if all went well, the three astronauts would be in a state of deep hypothermia in a special compartment just above the cabin. Chris climbed up a ladder to give it an inspection.

In contrast to the control cabin below, the "fridge," as it was christened by the astronauts, was a comparatively bare compartment. It was just high enough to allow someone to stand upright, though most of the time it was in use the fridge's occupants would be lying on their couches. These contour couches, as they were called, were specially made to fit the three members of the crew individually. They were so construced as to give support to all parts of the body during the periods of fierce acceleration that the ship would undergo.

"There should have been a fourth," Chris murmured to himself, "to fit me."

The only instrument in the hypothermia compartment was the temperature-control and timing device. Once the astronauts had been secured to their couches, had received an injection, and the instrument embedded in their arms had been activated, the temperature would be steadily lowered until they were—literally—frozen stiff. This would continue until the timing device set the process in reverse. Then, gradually, the three icy statues would return to life, none the worse for an interlude that could last hours or months.

After he'd seen all he wished to, Chris left the fridge by climbing down into the control cabin and then out through the hatch and into the corridor in the pyramid. In the open air he paused to take several deep breaths and to look around. With the protective clothing on, it was certainly hot inside Pluto One. He could feel rivulets of perspiration running down his face.

Then Chris turned his attention to the upper part of the spaceship. This was the portion that protruded above the top of the pyramid. It housed the telemetry and guidance systems. It also contained many sensors that would measure conditions on the journey to and around Pluto. The batteries, too, were situated in the upper part, and it housed the huge, sail-like wings that would be unfolded to gather solar energy.

Yes, she was in splendid shape, Chris thought as he gazed at the spaceship. Here was the pinnacle of man's technical achievement. As far as human skills were concerned, Pluto One and her sister ship represented perfection. Yet Chris, in spite of his pride in this fantastic achievement, had to admit to certain nagging doubts. If the machine they had created represented the ultimate, what about the three humans it was to carry?

He knew that Morrey, Serge, and Tony would be as well trained and fearless as anyone could be. They would bring the greatest possible experience to their task, for no one had made more or longer space flights than his three friends—up to now in his company.

Yet were they not approaching the limit of human endurance? Were they not close to the point when courage and experience could carry man no farther? Would not human frailty set bounds to the worlds we could conquer? This expedition to the outermost planet would decide that question.

A new factor was now entering into the situation. By training, skill, and ingenuity, man had overcome all obstacles so far. But this time-shift was something that no degree of technical ability could overcome. Because this would be the first time any human being would be subjected to it to a measurable degree, it was impossible to predict the consequences. No one could say what physical or mental effect the time-shift would have on the astronauts.

If current theories were correct, Morrey and his companions would be living in a time some twelve hours different from other humans when they returned to Earth. And this wouldn't be a temporary difference that could be wiped out by another journey. It might be a permanent feature of their lives and one to which they would have to try to adjust themselves. Apart from the obvious adjustment that the returned travelers would have to make, it was possible that being twelve hours out of step with the rest of the world might have permanent consequences for them. They would no longer be creatures of Earth time but of some other time zone.

Chris completed his inspection of Pluto One. He would be devoting more and more time to the task as each day passed. Meanwhile there were other problems that he had to face, and Tutu was waiting patiently with the jeep. Chris went to the bunker to remove his protective clothing and then joined the cheerful Maldivian.

"You go to Hittaddu?" asked Tutu, assuming that Chris would wish to return to his bungalow during the midday heat.

"No. I'm going to Wilingili," Chris answered, knowing that Tutu would have to drive him to a different jetty. It only took a couple of minutes to reach the ferry to the island that housed the main control center. Chris jumped into a launch whose engine was already chugging away.

Unlike Gan, Wilingili boasted many buildings. They were not very beautiful to look at, though the fringes of palm trees, hibiscus, and Indian cherry trees improved matters considerably. The concrete, glass, and aluminum structures housed the great control complex. This was the nerve center of the whole operation. From here the

Pluto expedition would be guided and controlled. Every moment the spaceship was in flight, hundreds of instruments would be watching over its performance. Still others would be monitoring the astronauts themselves. Even though the crew would be under hypothermia, a constant watch on their health and well-being would be maintained by means of radio signals.

It was toward the main control room, the longest building on the island, that Chris made his way. Though it was less than a hundred yards from the shore, he was almost melting from the heat by the time he walked into its air-conditioned shade. Since he intended to stay some hours, Chris followed the usual practice of taking a quick, cooling shower and putting on fresh clothes from his locker.

By this time a number of section heads were ready to report to him, each anxious to show the deputy director the particular instruments he supervised. Chris listened to strings of technical jargon as each man reported the results of tests on instruments and on the spaceship. Even while a dozen of them sat down to a light lunch the conversation was purely technical, for these men were engrossed in their task and conscious of their responsibilities.

The long control room, a mass of instruments, screens, dials, and recorders, had a glass panel along the whole length of the side facing Gan. But this was no ordinary glass. It had been treated with a fine metal dust, the effect of which was to cut down the glare from the blazing scene outside, while scarcely impairing the view it gave of the launching site. Below this vast window was panel after panel of the vital equipment that would watch over Pluto One and, if necessary, her sister ship.

There were few people in the control room, for though it was shady and cool, most of the staff had got into the habit of taking a long midday break unless their work prevented it. Chris wandered around, speaking to those scientists who were still bent over their instruments, doing some inportant task. At the end of an hour, well satisfied, he moved outside and crossed to a smaller building, the computer center.

There always had to be a full staff on duty here. The computer was constantly processing information that came not only from a worldwide network of smaller computers, but also from the moon and the numerous satellites and probes with which near space was filled.

Rivaled only by a brother computer at Cape Canaveral, this amazing apparatus was, in effect, running the space program—at least, that was almost what it seemed to the scores of scientists and technicians who were in constant attendance. For scarcely any decision would be taken concerning the flight of Pluto One without consulting this incredible machine.

One question Chris would have dearly loved to ask—what would be the effect of the time-shift on his three friends?

But even this monster couldn't answer that one.

4

Whiskers had to use all his skill as an actor to avoid letting Morrey, Serge, and Tony know how his play-acting had succeeded in getting him enrolled. When, somewhat shamefacedly, they welcomed him at their training camp at Farnborough, he was hard put to it to conceal his glee at the success of his plan. Within an hour they had slipped into the old routine of lighthearted teasing that helped the men to relax while they went about the serious business of preparing for their flight. If only Chris had been there with them. . . .

The training of the three astronauts was reaching its final stages. Much of the day was spent on briefing sessions and lectures, so that they were certain they knew all that could be known about Pluto and its neighborhood. Of course, no one could tell them much about the mysterious Planet X that was supposed to be somewhat beyond the orbit of Pluto. All they could be told was that it must be small yet dense, for though it couldn't be detected by the best telescopes on Earth and moon, its mass was sufficient to perturb the orbit of Pluto slightly.

Another thing that puzzled the astronauts was that this slight deflection in the path of the sun's most distant satellite hadn't been detected before. In spite of a close scrutiny of records and observations kept since Pluto had been identified in 1930, no evidence had been found of the possible presence of Planet X. Though observations and measurements were now much more precise than they had ever been before, it was hard to believe that past generations of astronomers had completely missed this strange behavior of Pluto.

An important part of the astronauts' training was the time spent in an exact replica of Pluto One's cabin. Every instrument, dial, and switch was present in the mock-up, so that Morrey and his colleagues could learn the position and purpose of each. They had even to practice locating them when blindfolded to make sure that they knew the exact position of every one.

During training an anxious watch was kept on the health of this important trio. A last-minute illness, or even a slight accident, could jeopardize the whole program.

This was where Whiskers proved invaluable. He made himself entirely responsible for the safety and well-being of his three charges. From the exercises first thing every morning to tucking them up in bed at night, he never left them.

However, there was one short period when the three were not under the eagle eye of the ex-pilot. It was necessary for them to spend a few days in Lunar City, the first and largest human settlement beyond Earth. It was here that the great observatory was sited, with its huge optical and radio telescopes. The astronauts spent three days gazing at Pluto and the other planets in the perfect viewing conditions on the moon. Even so, because of its great distance, they could see little more than a small, faint disk. Tony declared he could see markings on the planet, but this could well have been an optical illusion.

Because of age, poor Whiskers had to remain earthbound. But he was waiting impatiently at the Cape Canaveral spaceport when the moon ferry touched down.

"You haven't been getting into trouble up there, have you?" he demanded sternly. It took all the persuasive powers of the astronauts to convince him that they hadn't fallen from grace during their temporary escape from his care.

Four days later, Sir Billy Gillanders called Whiskers and his charges into his office.

"You can pack your bags," the director told them. "As you've completed your training here, you leave for Gan in two days' time."

Of course Morrey, Serge, and Tony were highly delighted at the news.

"Have you finally fixed the date for our takeoff?" Tony asked, for it looked as if the great day were looming nearer.

"Not precisely," the director answered, "except that I hope it will be in four to six weeks' time."

As soon as that? For a second the three astronauts and their guardian were silenced. They were all aware of the critical and dangerous nature of the mission they were so soon to undertake.

"Good," Tony declared stoutly, being the first one to break the moment's silence. "It can't come too soon for me."

5

The astronauts had been on the Addu Atoll for just a week, and though a host of unknown perils lay ahead, they were having a wonderful time with Chris, Whiskers, and Sir Billy. Whiskers, in particular, was glad to see that the astronauts were not letting the future worry them. He intended to do his job—to keep them well and happy.

Almost every evening there was a party in one or other of the bungalows. The wives and families of the scientists and engineers would be staying with them until two weeks before the blast-off. Then everyone not directly engaged on the Pluto project would leave the islands and return to Britain, the United States, or elsewhere. This was primarily a safety precaution, but it also enabled the men and women who were left to concentrate exclusively on their task—preparing Pluto One and its crew for the momentous voyage. Meanwhile the parties could go on, and the astronauts were in great demand at them all.

One of the most memorable was at the director's large bungalow. Lady Gillanders had had all the folding partitions opened, including those leading to the huge patio that ran all around the bungalow. Hundreds of colored lights had been strung up and placed in the surrounding palm trees and bushes. The effect was delightful, and

Tony let out an exclamation of pleasure as he saw it. In the palm trees the lights winked as the gentle breeze coming in from the ocean waved the fronds across them. And above all sailed the serene moon, once the object of legend and romance, but now an important base in man's exploration of the universe.

Sir Billy's daughter, Betty, an old friend of the astronauts, came out to meet them. Chris remembered her when she had been a tall, gawky girl still in school. Now she was a scientist herself, and if Chris wanted to tease her he called her "Doc." Betty specialized in biology, and she'd joined her father's staff six months before. Secretly Sir Billy was proud of his clever, popular daughter.

"You're late," Betty complained. "What's been keeping you?"

"It was Tony." "It was Chris." "Serge wasn't ready." "Whiskers lost his shirt." They all put the blame on each other until Betty ordered them to be quiet.

"You're all equally guilty," she said severely. "Here I've been waiting for a dance. Mind you," she went on, "I could have had plenty. But my mother said I should wait for you. And all the thanks I get is that you come late."

"Sorry, Betty." Chris grinned. "Can I get you an ice cream?"

The party was a great success, and the evening went by all too quickly. No wonder that the astronauts felt a twinge of resentment when the faithful Whiskers told them all that it was time to go. In spite of his threats they had one more dance before allowing him to shepherd them toward the patio. Lady Gillanders came hurrying to wish them good-night. Betty had been dancing with Serge, for the astronauts had shared her scrupulously.

"I'm giving another party the evening before we leave," their hostess said. "Perhaps Mr. Greatrex will let you stay a little later then."

Whiskers shuffled uncomfortably. He himself would have dearly loved to remain to the end. But his course of duty made him insist that his three charges should get at least a few hours of sleep before the rigors of the next day.

"A whole week to wait." Tony sighed as they were herded back to the bungalows.

"Oh, it won't be as long as that," said Chris, who'd left the party with them. "You're going in the fridge."

The astronauts knew what that meant. They would be entering the hypothermia compartment of Pluto One and testing it out. From what Chris had said, they would actually be put to sleep.

"When do we have the first spell?" asked Tony.

"In the morning. We've tried out the AHA on its own but not with anyone inside. Yours will be the first real test."

The AHA, or automated hypothermia apparatus, was one of the most vital parts of the huge, complicated spaceship. The astronauts would depend on it to be put to sleep and reawakened at the appropriate times. The slightest fault could prove disastrous, for the flight plan, both on the outward and return journeys, called for crew participation in the last stages. If the AHA didn't work correctly, the crew might still be frozen when they should be guiding Pluto One, and there could be only one result of that. On the other hand, if they were aroused from hypothermia prematurely, the strains of the voyage would be too much for them. No conscious human being could withstand the stresses to which the spaceship would be subjected.

Though they had had less than their usual quota of sleep, the crew, with Whiskers and Chris, were awaiting the launch at six o'clock next morning. Already the sun was climbing rapidly in the sky and the heat was beginning to build up. They were perspiring gently when they set foot on Gan. Tutu drove them to the underground bunker to be suited up against any possible radiation hazard. A special vehicle, with a protected driver, took them right to the foot of the pyramid. In two trips the "cliff railway" had carried the whole party up to the cabin of Pluto One.

It was a tight squeeze for everyone to get inside, and the first load of passengers had to move into the hypothermia compartment above the cabin to make room for the remainder. Serge, Morrey, and Tony found it a relief when the airlock was shut and they were able to remove their protective clothing. The other members of the party merely took off their hoods and gloves.

The first task was for the space medicine specialist, Squadron Leader Lambert, to give the astronauts a quick checkup, and to confirm that the tiny instruments embedded in their chests were functioning. The instruments gave the men no discomfort, but their purpose was to maintain just a slight flicker of life in the heart during hypothermia. Each of the three astronauts had had the instrument in his chest for several years, as had Chris himself. Except for occasions like this, they all had forgotten it was there.

Another thing the chief medical officer had to do was to give each astronaut an intravenous injection. In effect this was to pump into the veins a small quantity of fluid, which acted in much the same way as the introduction of antifreeze into the radiator of a car. It would prevent the blood from solidifying during the long period of hypothermia.

At last the squadron leader announced that all was ready. The pacemaker in the chest of each of the crew was functioning. The "antifreeze" was now circulating through the bodies of the three. Exchanging the usual banter with Whiskers, the astronauts settled themselves into their special couches.

These couches were specially padded and sprung. This was to minimize the effect of the enormous strain on their bodies when the first atomic explosion launched their ship into space. Even though the explosion would be carefully controlled, it was still powerful enough to destroy the astronauts but for the help of the contour couches and the hypothermia.

Morrey, Serge, and Tony now removed all their clothing except for a light cotton undershirt and shorts. As they eased themselves into their couches they joked with as many people as could squeeze into the fridge. Poor Whiskers was confined to peering up through the hatch in the floor.

"All set," declared Squadron Leader Lambert, and the astronauts proceeded to affix their straps. A quick examination assured Chris that these were all right, and then it was time to withdraw.

"By the way—how long will we be frozen?" asked Tony.

"You wait and see," grinned Chris. "You might wake up on Pluto."

Before any more questions could be asked, he'd gone down into the cabin, and the crew could hear all their visitors departing. They heard the clang of the airlock that proclaimed they were now on their own.

Away on the island of Wilingili, in the long control room, Dr. Rosenberg and Professor Boronoff, two of the top scientists, nodded with satisfaction as they received the signal that all was ready on Gan. A whole bank of instruments would be monitoring and controlling everything that went on in Pluto One's hypo compartment. If one of the astronauts even blinked an eyelid, it would be recorded somewhere.

Dr. Rosenberg pressed the series of switches that set the AHA in motion. Though the astronauts hadn't been told this, their period of hibernation had been set at forty-eight hours. From now on the timing apparatus would handle everything, and there would be little for Control to do except to keep an eye on all the monitors. At the end of the two days the AHA would switch itself off and the crew would be brought back to life. It was a simple procedure, and one that had been performed innumerable times before. But this was the first full test in Pluto One, and it was vital to the success of the whole undertaking.

The astronauts first knew that Control had started the freezing process when three transparent plastic covers descended from above their couches. These covers came down until they were snugly covering each of the three young men. There were only a few inches of space between the covers and their faces.

At first the astronauts had a shut-in feeling, but this rapidly disappeared, for they could see each other quite clearly. Also each cover had a small microphone that enabled them to talk with Control and with each other.

"I'll bet you five pounds you can't guess how long we'll be frozen," Tony said to his companions. "You won't tell them, will you, Control?"

"No," a voice from Wilingili answered, "that is—maybe, if you'll cut me in on the winnings."

"You've got a hope," Tony called back. "I've never known these two to pay up on a bet yet."

"That's not true," the voice of Morrey bellowed back.

"You're the young rip who always finds some excuse why any bet you lose is void."

"Correction," Serge interposed. "I did get a dollar out of him once on a beetle race at the Cape."

"Then you're luckier than I am," Morrey snorted, "and now he has the nerve to challenge us to another bet. Gosh! It's getting a little chilly."

It was true. The hypothermia process was well on the way, and the temperature inside each of the transparent covers was falling steadily. The astronauts knew precisely what was happening. They would fall into a frozen sleep before they were aware of it.

Countless times, on previous occasions, they had tried to detect the moment of transition. Each of them had endeavored to pinpoint his last thought before slipping away into unconsciousness. But it had been in vain. Not one of them, on any single occasion, had ever been able to remember when consciousness ended and hypothermia began. Likewise they were never aware of the precise moment of their awakening, for the two events—no matter by how long they were separated—seemed to merge into one.

An observer would have seen the flesh of the three young men grow paler as their body temperatures fell. Though they didn't know it at the time, their heartbeats, their respiration, even their thoughts, were beginning to slow down.

At last the chatter finished, the electrocardiographs in Control barely flickered, the respirations counter was stilled. The men's eyes had closed, all color had drained from their faces. It was as if they were now three perfectly fashioned lumps of frozen wax. Thus they would remain, their lives at the lowest possible ebb, until the AHA recalled them from the brink of death.

Forty-eight hours went by. Chris, Sir Billy, and Whiskers had had constant reports that conditions in Pluto One's fridge were normal. Each of the three astronauts had remained unchanged. Sealed into their couches by their transparent covers, they had remained static while time went on around them. Everywhere else the bustle of the launching complex continued. On all the islands life went on at a quickened pace.

Two torrid days and two warm nights passed. It was time for the sleepers to awake.

The automatic hypothermia equipment was as perfect and infallible as man could make it. It had been tested and improved over many years. Yet, without admitting it to each other, the little knot of scientists and friends were secretly relieved when they heard the slight click that announced the beginning of the crew's return to life.

In the fridge itself, the color had begun to creep back into the flesh of the three recumbent figures. Slowly they were beginning to lose that waxen look. The monitors on Control revealed the slow return to life. Both the electrocardiograph and the instrument recording respiration had begun to flicker. Gradually the blobs of light and the needles were oscillating more, indicating that pulse and breathing were becoming noticeable.

Had there been someone in the hypothermia compartment, he would have seen the chests begin to heave and the eyelids flutter. Within a few seconds of each other the astronauts opened their eyes—conscious once more.

"Good show. It's all over," the voice of Whiskers greeted them. Tony snorted in disgust. "Didn't even know it had started," he growled.

6

The date of the launch was rapidly approaching. Farewell parties had been held, and the families of the scientists and technicians had left to return home. Everyone's attention was now concentrated solely on the task ahead. Even through the killing heat of midday, teams worked on the final preparation of Pluto One, the control room, and the tracking stations that would follow the spaceship's flight. Even Pluto Two was not neglected, for Sir Billy Gillanders had insisted that this second ship must be in perfect readiness for launching in case there should be trouble at the last minute with Pluto One.

Serge, Morrey, and Tony had become equally familiar with both ships, for in every possible way they were identical, except that there was no nuclear fuel in the second ship. This would be loaded only if Pluto Two had to take off, but that possibility was remote indeed.

When the countdown entered the last twenty-four hours, there were still a thousand and one things to do, and each of the scientists, engineers, and technicians engaged on the project had a checklist. This consisted of details of the work assigned to each of them, and it was tied to the clock. Delay in executing any of the multitude of jobs by the precise time laid down on the checklist could lead to a postponement of the launch. It was a matter of pride with everyone that there should be no "hold" in the smooth running of the countdown.

So far all had gone well. The actual moment was timed for six o'clock the following morning. The time was now T minus twenty-two hours—and counting. At T minus two hours, namely, 4 A.M., the three astronauts would take leave of all their friends and enter the main cabin of Pluto One. There they would make a quick check of instruments and communications before entering the fridge at one hour before blast-off. From that moment they would seemingly cease to exist until they were defrosted in the region of Pluto.

The last day was spent on the final medical checks and in briefings. A few high officials of UNEXA had come for the blast-off, though Sir Billy and his assistants were too busy to pay them the usual courtesies. About a dozen selected representatives of press and television had also arrived, to be the eyes and ears of the waiting world.

As the day passed and the countdown proceeded, tension on the islands began to grow perceptibly. Sometimes it was manifested in a sharp remark or a sarcastic comment. Everyone began to feel the strain and no one thought of rest. Except, of course, the three astronauts themselves. For this was where Whiskers was doing a great job. He was keeping his charges happy and relaxed, and preventing the general strain from infecting them.

But as they were preparing for sleep, a silence fell on them. This would be the last night they would spend in an ordinary bed for some time. Within ten hours they would be sleeping a very different kind of sleep.

It would be a sleep that closely resembled death!

Chris worked all night. He made no attempt to rest, for he knew that sleep would be impossible. Instead he flung himself with tireless energy into his quota of those many checks. Even as he worked, he was aware of a nagging worry at the back of his mind. What was this expedition going to do to his friends? He had no fears of technical failure. Far too much care had been put into the preparations. Perfection had become a science, and there was also a vast amount of past experience to draw upon.

It was the men themselves who were the imperfect parts of the whole assembly. Though Tony, Morrey, and Serge had been trained to the highest degree, yet as human beings they were fallible. Chris recalled past controversies, still sometimes revived, about whether to send men or machines in flights of space exploration. His view was that there was room for both. In the initial stages of exploring a new planet or satellite, instruments could discover a great deal. But it required that most complicated of all instruments, the human brain, to direct the advanced stages of the job.

But if the human brain was a most complicated instrument, it was also a most delicate one. It could easily be damaged. If the brain is damaged, terrible things can happen to its owner. What would be the effect of the terrific acceleration of the nuclear propulsion on his friends? Even though their brains, like the rest of their bodies, would literally be in cold storage, it was impossible to predict the results of the great stresses on delicate cells.

Then there was this strange effect called time-slip. It was different from the change of time experienced in flying from one country to another. Travelers adjust to this very quickly. But when the crew returned from the Pluto One expedition, their life rhythm would be many hours out of step with that of people on Earth. Would they be able to readjust themselves? No one knew.

It was a risk that must be taken. Like so many other risks that had been taken hitherto in the exploration of the solar system, it was necessary to advance man's knowledge. Chris himself, had he been permitted, would not have hesitated. He knew that Tony, Morrey, and Serge were not hesitating either.

Chris looked at his watch. It was three o'clock, and just about the time when Whiskers would be arousing the astronauts. Chris had almost finished his own tasks and would soon be free to join the three in a last meal. Then he would stay with them until they entered and were sealed in Pluto One's cabin. Sir Billy, who had also been working all night, might join them.

All the checks in the control room on Wilingili Island, all the tests and preparations of the spaceship on Gan, all work on the tracking stations scattered over the globe had gone well. A few minor hitches had been found, but these had been rectified during the holdups that had been deliberately included in the countdown. So all was going according to schedule. It was T minus one hundred and seventy-five minutes and counting!

Tony yawned as Whiskers shook his shoulder persistently.

"Go away," he mumbled.

"Rise and shine," the ex-officer shouted. "It's a lovely day for a trip."

Tony was about to express himself a little more forcefully when he remembered what day it was. His eyes grew large and very wide awake.

"Gosh!" he breathed, "it is today, isn't it?"

"Today's the day," Whiskers answered breezily, "so jump out of it, young feller-me-lad."

Morrey and Serge were already dressing quietly. Each was trying to suppress the fluttering that he felt in the pit of his stomach. Though they had been training for months for this moment, though they had been launched into space many times before, though they were devoted to their task and almost without fear, it was impossible not to feel a certain tension about the task that lay ahead.

"Chris and Sir Billy are coming to share a steak with you," Whiskers announced as he sat on the side of Tony's bed.

The mechanic leaped up and was soon whistling cheerfully.

"Must brush my teeth," he called from the bathroom. "Can't visit Pluto looking second rate."

He joined his two companions fresh from a cold shower. All three were ready for the astronauts' traditional preflight meal of steak by the time Chris and Sir Billy arrived.

"Countdown's okay," the director said even before anyone could ask the most important question in all their minds. It would be bad for them if there were a holdup at this late hour.

It was a cheerful meal. Whether or not everyone was hungry, they were all determined to put on a happy face and do justice to the fare Kari was serving them. The jokes they exchanged, the gibes and banter might have sounded a bit flat on any other occasion. This morning the men were finding them uproariously funny, and it seemed that each was trying to make the most noise.

An awkward silence fell as the meal came to an end. It was time to go out to the motor launch.

"We must have another party as soon as you return," Sir Billy said heartily. Everyone knew he'd said this to break the tension of the moment, and there was much laughter, though some of it was forced, as they hurried to the chugging motorboat.

Tutu greeted them with his usual grin, and in moments the boat was shooting out from the jetty. It was dark, of course, except for the faint light from a brilliant sprinkling of stars. The moon hadn't yet risen, but the glowing, winking suns and planets of the night sky did their best to make up for its absence. The creamy wake behind the launch showed that Tutu was going flat out.

In the distance there was a glow in the sky, a glow that held special significance for the three astronauts. For it came from the island of Gan, where a vast, man-made pyramid, bathed in brilliant floodlights, housed the ship that was to take them to Pluto—or destruction.

7

The vehicle that met the launch first carried the party to the underground bunker for them to put on the protective clothing. Squadron Leader Lambert, the medical officer, took the opportunity to have a last-minute look at the three, and pronounced them fit. With the director, Chris, and Whiskers, the crewmen climbed into another vehicle for transport to the pyramid.

Although the scores of men swarming over the pyramid and the spaceship were all masked in the same protective clothing, it was possible to detect the air of excitement. All the anonymous scientists and engineers gave the astronauts the thumbs-up good-luck sign, and Morrey, Serge, and Tony waved back in reply.

Their vehicle halted at the foot of the cliff railway. Led by Chris, the hooded party made the ascent to the level of the cabin, where half a dozen more masked figures were waiting. They were the men who had just made a final check of the cabin and the hypothermia compartment. Discreetly they descended on the cliff railway, leaving Whiskers, Sir.Billy, and Chris to take leave of their friends.

It was an emotional moment. Chris, for one, was now grateful for the mask covering his face. It was terribly hard for him to let his three closest friends go without him. He didn't trust himself to speak, but gave each of them a long, hard clasp of the hands that carried a wealth of meaning. Whiskers gave his usual exhibition of hearty backslapping, while Sir Billy gravely shook hands with the trio. Then Tony, followed by Serge, and finally Morrey climbed into the cabin.

The hatch swung to, and the astronauts were sealed from the sight of men. It was precisely T minus one hundred and fourteen minutes.

Inside the cabin Morrey was not going to give his companions time for reflection. He whipped off his helfet and signaled to the others to do the same.

"At least we won't have to wear these things for some time," he declared lightly.

Tony and Serge removed their protective clothing too, and stowed it in the locker. Many things would happen before they would need their suits again.

Now they began a rapid examination of their cabin. Not that it was necessary, of course, but regulations demanded it. All three were familiar with every square inch of the cabin, and with every instrument within it. Lights on the instrument panels were all green, indicating that all the systems were "go." Morrey switched on the radio and immediately the voice of Control came through.

"T minus one hour and five minutes," it reminded them.

"Everything okay," Morrey called back. "We're going up to the fridge now."

With a last glance around to see that everything was secured, the crew climbed the steps into the hypothermia compartment. From a box near their couches Morrey took three hypothermia needles that had already been loaded. Quickly he gave his two companions a jab and then gave himself one.

Into the microphone suspended over his couch, Morrey reported, "Injections completed."

"T minus one hour two minutes," Control replied.

One by one they settled into their respective couches. But instead of the jokes and banter that had preceded their practice runs, they lay silently—each busy with his own thoughts. For this was no simulated exercise. This was the real thing.

"Here come the covers," Tony called out, a brittle note in his voice. Calm! They must all keep calm. Control would be listening. This was what the long months of training had been all about.

All over the island of Gan the sirens blared. This was the signal from Control that the island was to be evacuated. Every man, woman, and child must take to the boats and withdraw to Wilingili. Sir Billy and Chris took a last look at the pyramid and Pluto One before climbing into the launch.

The time was thirty minutes before blast-off when they reached their positions in Control, and a glance at one of the display panels showed that the three crewmen were under hypothermia. All was now set for firing them off into the outermost reaches of the solar system.

There was little more for Chris to do until the actual moment of the launch. He sat at his desk in the long room where more than a hundred men and women were watching their own particular instruments in silent concentration. If any one of them noticed anything wrong, he had only to press a red button to stop the countdown. The ever-changing figures on the time indicator revealed that no one had done so.

"T minus twenty minutes," the indicator said.

Chris found his eyes drawn irresistibly to the changing tally of seconds and minutes that might spell the remaining life span of his three best friends. He too had a red button on his desk that could stop those relentlessly changing figures. One touch and the minutes and seconds would stop slipping away. They would remain frozen until Sir Billy restarted the count.

As these thoughts passed through Chris's mind, his hand strayed toward the red button. It was as if it had a will of its own. Fascinated, he watched it. Would it punch the fateful button and save his friends? In the nick of time his will asserted itself. He snatched his hand back as it was within inches of the red knob. To have interrupted the undertaking without just cause would mean endless trouble. The countdown would be halted and might even have to be put back or postponed. No. The blast-off must take place on schedule.

Ten minutes to go. Sir Billy sat rigidly at his own desk, the green switch that would set events in motion within easy reach. When zero hour came it would be the director himself who would send out the electric impulse that would trigger off the first controlled nuclear explosion. The fingers of his right hand beat out a restless tattoo on the desk as his eyes noted the fleeting seconds.

"T minus eight minutes and all systems go," a voice called out monotonously.

Sir Billy glanced across at Chris. The young man must surely be wishing he were in the spaceship instead of sitting behind a desk in Control. Though the director was a close friend of each member of the crew, Chris must be far closer, having lived through so many adventures with them. Everyone in Control was concerned for the success of the venture and the safe return of the astronauts. But no one could be as deeply and personally concerned as Chris.

One minute to go! Every sound in that long room was silenced. Only the ten-second calls of the announcer broke the heavy stillness. Chris found his breath coming rapidly, and a light perspiration moistened his face in spite of the effective air conditioning. He gripped his hands together tightly in case one of them should break free from his control and press the red button.

Pluto One and the pyramid appeared on a huge television screen. They were viewed through the telescopic lenses of a specially protected camera. No one would observe the launching directly because of the danger from radiation and flash. Chris looked up at the screen and offered a silent prayer for the safety of his friends. Then he pulled himself together with a jerk. The announcer was calling out the last seconds.

"Seven. Six. Five."

Chris's throat went dry. He was quite sure his heart stopped beating.

"Four. Three. Two. One. ZERO."

With a sharp movement Sir Billy had pressed down the firing lever. The die was cast!

All eyes were glued to the TV screen. For a split second nothing seemed to be happening. Then a vast gush of steam and smoke shot out of the tip of the pyramid, for Pluto One had vanished. Chris's life seemed to stop for just one moment of time. Then reason reasserted itself. The tiny atomic explosion—the smallest possible—had still been powerful enough to shoot the spaceship out of the concrete shaft like a shell out of a gun.

Pluto One would be climbing into the upper atmosphere at several hundreds of miles an hour. But had the frozen crew survived? Without the special contour couches, and without hypothermia, they would have been killed instantly by the terrific impact of the launch. Tests—hundreds of them—on animals had shown that it was possible to live through it. At least animals could. What about human beings? Were Tony, Serge, and Morrey still lying peacefully in their frozen sleep? Or had their bodies been pounded to a pulp by the explosion?

"Altitude three miles," someone called out.

It was the scientist who was following the ship's flight with his instruments. For the next few minutes his observations would be of the utmost importance, for the computer would know from them whether the launch had gone as calculated.

"Crew all okay," someone else shouted excitedly.

It was the news everyone had been waiting to hear. The tiny pulses that still kept the astronauts alive had been monitored and recorded back in Control. Chris almost sobbed with relief. At least his friends had survived the blast-off.

"Altitude five miles," the first scientist called. With a few more readings to feed into the computer, Sir Billy should soon get his answer.

Of course this launching was very different from that of a chemical rocket. The chemical rocket started at zero speed and rapidly accelerated as it consumed more fuel and encountered decreasing resistance from the thinning atmosphere. The nuclear propulsion of Pluto One was the reverse. Its small atomic explosion fired it up the shaft at maximum speed, and then it began to decelerate under the pull of gravity. Without further assistance it would rise to a height of about eighteen miles and then fall back to earth. However, at an altitude of twelve miles, a second small atomic explosion would force the ship along faster than ever.

Over the next few hours a large number of explosions would follow, each helping to build up a fantastic velocity. It would be almost a continuous process until the incredible velocity of twelve million miles per hour had been achieved. Then the ship would streak along under its own momentum. It would follow its predetermined path, and any corrections necessary would be made by firing small chemical rockets called laterals. These would nudge the ship in any desired direction, and the duration of their firing would be decided by the computer. Upon this would depend the angle through which the ship's path would be diverted. Radio signals from Control would do the job, firing the selected lateral for the desired period.

A slip of paper was placed on Sir Billy's desk. He read it quickly and gave a relieved grin across at Chris. The computer room had said that, so far, Pluto One was following a perfect trajectory.

At precisely twelve miles high, the second atomic explosion took place. It was recorded instantly in Control, and Chris felt the tension beginning to relax a little.

So far all had gone well. Pluto One, with its frozen crew, had been launched successfully. The astronauts had suffered no injury so far as could be ascertained. All the equipment seemed to be functioning, and the velocity and trajectory were as planned. Chris left his desk and went over to join his chief. He could see that Sir Billy felt as relieved and elated as he did. They shook hands in mutual congratulation.

The control room was a scene of quiet, efficient activity. Scores of instruments were receiving telemetry signals from the speeding spaceship and translating them into information about the flight. Temperature, pressure, internal and external radiation, stress measurements, and a dozen other pieces of information were revealed on the dials and screens. The computer lapped up every scrap of information greedily and in return assured the scientists that all was well.

In an incredibly short space of time compared with previous standards, Pluto One was thirty thousand miles from Earth. It was at this point that the computer decided that a correction must be made to the ship's flight path. The necessary instructions were punched out and radio signals were dispatched to the lateral rockets. A thumbs-up sign from one of the engineers indicated that his instruments had confirmed that the laterals had fired correctly. Now the tracking boys would take over to see if the new direction of the ship was as planned.

It was. Pluto One was behaving beautifully. The explosive bursts came with precision, and the buildup of velocity was within one half of 1 percent of that predicted. So far this new method of propulsion, dangerous though it was, had proved reliable and effective. Perhaps it would turn out to be the means of breaking out of our solar system and crossing the fantastic distance to the stars.

The sun was just setting and the ship was more than five million miles along its journey when Sir Billy insisted that Chris should accompany him off duty. Pluto One had been launched twelve hours before and had settled into the calculated trajectory, so there was little to do except monitor the incoming signals. Both the director and his deputy had been on duty for thirty-six hours. Now that the tension had eased, they both felt incredibly weary.

"We'll be falling asleep on the job if we don't get some rest," Sir Billy pointed out, and Chris had to agree. He knew that they would be recalled instantly if anything unforeseen happened.

As they chugged back to Hittaddu, Chris looked up into the darkening sky. Already some of the brighter stars had sprung out. Somewhere in that vast arc above them was Pluto One, carrying its silent crew. For the next two weeks they would be inert. Then they would be aroused to witness sights that no man had ever seen before. They would have to perform tasks in which he couldn't share. They would have to seek out the mysterious Planet X. How Chris would have loved to be with them.

8

Day followed day, and still the spaceship sped on. By now it had reached its maximum velocity of twelve million miles an hour. No ship had ever traveled at anything like this speed before, so the scientists at Control were watching its performance with close interest. Chris, of course, was even more interested in the physical condition of his friends.

Their body temperatures remained constant and the slight pulse and respiration indicated that all three were still alive. But he would be relieved when they were defrosted and he could speak to them once more.

Eleven days after blast-off, when Pluto One was more than three-fourths of the way along its trajectory, there came the moment for the next maneuver. The ship had to be slowed down, otherwise it would be moving far too fast to enter an orbit around Pluto, but would continue on forever into the depths of space. The way to decelerate the ship was to use the same means that had built up its high velocity, the continuous atomic explosions of its nuclear engine. But to do this it would have to be turned around, tail first. Then the thrust of the explosions would be against the direction of flight and would thus slow it down.

Again the lateral rockets were brought into use. Radio signals from Control caused one of them to fire a short burst that set the spaceship turning slowly on its transverse axis. It was then necessary to fire another lateral on the opposite side in order to stop the turning motion. Otherwise the rocket would have continued to roll along nose over tail.

The whole operation was complicated by the fact that, traveling at 186,000 miles per hour, it took the signals more than four hours to reach the spaceship. As timing was all important, the exact position of Pluto One, to within a few hundred miles, had to be known. Only the computer could work this out. Not until some hours later would it be known whether the maneuver had succeeded. Till that time had passed, all that the men in Control could do was to wait patiently.

At last Control confirmed that the ship had turned around through just one hundred and eighty degrees and was in position to commence deceleration. Sir Billy gave the order, and the impulse that would restart the nuclear explosions was sent on its way. If all went well, Pluto One would start slowing down just as quickly as it had built up velocity after blast-off.

One of the instruments that concerned Chris most was that which recorded the minute signs of life coming from his friends. It seemed that, in their frozen state, they had survived all the stresses of the explosive takeoff, and should be all right during the equally shattering deceleration. What a relief it would be when this was completed and the crew could be aroused from their frozen slumber.

In theory Sir Billy and Chris should have shared their duty in Control, relieving each other at twelve-hour intervals. In fact they left the building but rarely, preferring to sleep on camp beds in a spare office. The strain was beginning to tell on both of them, but how could they be expected to relax when the lives of their friends were at stake?

Deceleration had begun. The continuous atomic explosions were forcing Pluto One to slow down. Its objective was getting nearer, though the astronauts were in no position to observe the planet. They still lay motionless and cold on their couches. For nearly two weeks they had not moved, but soon life would flicker back into them. They would breathe and move and think again.

In Control the progress of the ship was being carefully watched. Its velocity and exact position were of crucial importance, for upon these two pieces of information would depend the moment, perhaps the most critical of the whole expedition, when Pluto One would be turned into orbit around the planet from which it took its name.

In all the calculations made by the scientists manning the instruments, one overriding fact had to be borne in mind. The situation as revealed by the incoming radio signals was over five hours out of date, and any impulse sent out from Earth would take as long to have any effect on the spaceship. Thus more than ten hours would elapse between something happening in Pluto One and the arrival of the signal that would cause any necessary action to be taken.

Here, thought Chris, was another powerful argument in favor of manned expeditions. A human crew could themselves make instant decisions and would have no need to refer urgent situations to Control. For example, damage caused by meteor penetration could be detected instantly and repaired quickly by a resident crew. The ten or eleven hours necessary for action from Earth would be far too long. So it would greatly increase the safety of the expedition when Morrey and his companions could be aroused and reactivated.

The spaceship was now less than ten million miles from Pluto, and its speed had dropped to a mere half million miles an hour. The computer was working out the precise moment when the signal must be sent out to set the AHA in motion and commence the defrosting of the crew.

It was necessary to complete the deceleration down to a speed that was suitable for putting the spaceship into orbit before the crew became conscious of the terrific stresses caused by the atomic motor. Once the motor had done its job and could be shut off, the crew could be activated and could supervise the turning of Pluto One into orbit around its namesake.

The intricate instruments, with their banks of winking lights and their rows of turning tapes, came up with the answer. In twenty-three minutes' time the signal must be sent that would start the automatic hypothermia apparatus. By the time it reached the spaceship, Pluto One would have slowed down sufficiently. It could be placed into orbit by the crew as soon as they had recovered.

Of course, both Sir Billy and Chris were in Control at that moment. Knowing how he felt, the director suggested that his deputy should himself speed the signal on its way. Chris, who was plainly showing signs of strain, smiled his appreciation. With eyes glued to the chronometer, he placed his hands on the switch and pressed it. The radio wave began its long journey. Given half an hour for the thawing process to be completed, in less than twelve hours he would hear the voices of his friends once more. If all went well, he would be talking to them during his next spell on duty. That reminded him that he was feeling exhausted. Better go to his bungalow to get some rest while the radio signals did their job.

Sir Billy accompanied Chris to the launch that was taking them back to Hittaddu. For a time they were both silent. Then Chris spoke the thoughts that troubled him most.

"It's this time-slip that bothers me," he confessed. "I can't find anything to go on. It's impossible to tell from the experiments on animals what the effect on Tony, Serge, and Morrey will be. What worries me is this: Will their time, after they return, be permanently out of step with our own? Or will they soon revert to our time, as terrestrial travelers do?"

"What would it mean if they were permanently out of step?" Sir Billy asked.

"It's too fantastic to contemplate," Chris replied. "Because they are traveling along with time, less time will have passed for them than for us. So, when they get back to Earth, twelve hours less will have elapsed for them than will have passed for you and me."

"But surely once they're back here with us, their time must be the same as ours," the director exclaimed.

"I don't know. That's what's worrying me," Chris confessed. "Suppose it isn't. What if something happened to us and them and, even though we were all in the same room, they wouldn't perceive it until twelve hours later? What if we spoke to them, and they wouldn't hear us for twelve hours?"

"Does that mean we'd have to wait another twelve hours to hear their reply, just as we now have to wait over the radio?"

"I don't think so," mused Chris. "When they replied to us, we'd hear it right away after our question."

"Even though they don't hear our question until twelve hours later? That's preposterous! Why, it would mean that we'd hear their reply before they made it," Sir Billy exploded.

"Not at all," Chris explained. "This could be so only to an observer standing completely outside of time. Which, of course, is impossible. Their reply would come immediately after they heard our question, and we'd hear it immediately after we asked it. The only thing is that our perception of the same event would be different by twelve hours."

"I give up," moaned Sir Billy. "Give me electronics, nuclear propulsion, the calculation of trajectories and orbits—why, they're child's play compared with manipulating time. Anyway, we're home now. Dare I say it—it's time we were both in bed!"

Though it was but eight o'clock in the evening, Chris, utterly exhausted, slept well. He'd given strict instructions for Kari to awake him at two o'clock in the morning. This would give him time to have a cold shower, eat a snack, and be back on Wilingili by the time signals were due from Pluto One. As soon as Kari touched his shoulder, Chris was awake and alert. He would know soon if his friends were alive and well, and if they had been able to carry out instructions from Control to turn their ship into orbit.

Sir Billy hadn't appeared by the time Chris was ready.

"Hope he's not going to be long," Chris muttered impatiently as he waited at the jetty.

But no Sir Billy appeared. Tutu assured him that the director hadn't made the crossing alone. He must still be at his bungalow. This wasn't like him. Wonderingly, Chris walked quickly toward his chief's quarters.

Even before he'd reached the bungalow Chris knew that something was wrong. The lights were on and the door was open. But neither the director nor his houseboy was anywhere to be seen. With a sense of foreboding Chris strode into the apparently empty bungalow.

The table was set for a meal that hadn't been touched.

Sir Billy must have gone out before eating. But what about the Maldivian who looked after him?

While he was wondering what to do, Chris heard a sound. He spun around. The noise had come from Sir Billy's bedroom. Then it came again. Chris—heart beating—made his way to the closed door. He knocked. Again the muffled sound. Slowly he turned the knob and entered.

Sir Billy was stretched out on the bed. It was plain to see he had a high fever and was barely conscious. Chris went up to him and put a hand on his burning forehead. The director opened his eyes. For a moment he didn't recognize Chris. Then he managed to squawk from a dry throat, "You carry on."

There was a screech of brakes and Sir Billy's houseboy, with Squadron Leader Lambert, came rushing in. It seemed that Sato, the Maldivian, had found the director ill when he went to call him to breakfast. Sato distrusted the telephone and had run hotfoot to call the doctor. The squadron leader was already examining his patient.

Chris was racked with indecision. He was longing to get over to Wilingili to hear the first words from his friends. It was something he'd been waiting for ever since he'd said good-bye to them before Pluto One blasted off. Because this was the first voyage on which they had gone without him, the need to hear their voices was overpowering.

Yet his chief was ill. How ill he didn't know. Squadron Leader Lambert was still bending over Sir Billy, feeling his pulse, taking his temperature, and listening to his chest.

"He's picked up a virus," he said at last. "We'll have to get him into sick bay."

"Then—then he'll be out of action for some time?" Chris asked.

"For a week at least. Maybe two. Can I use the phone?"

A thousand thoughts filled Chris's mind. Sir Billy was ill. Maybe in no danger, but sick enough to prevent him from controlling the most critical stage of the expedition. Could Chris himself do it? He would have to. There must be someone in Control to make decisions and to accept ultimate responsibility. He was Sir Billy's deputy—though a recently appointed one—and it was his duty to take charge. But what a frightening responsibility, to hold the lives of his friends in his hand.

"Anything I can do, Doc?" the anguished Chris asked.

"No. Off you go. I'll see to him. Come and see him in sick bay when you have a moment," the squadron leader said kindly, for he guessed what must be passing through Chris's mind.

Still the young deputy director hesitated. It was terrible to see his chief in such a condition.

"Haven't you a spaceship to control?" the doctor asked pointedly.

Chris heaved a sigh.

"You're right, Doc," he conceded, "but keep me posted, won't you?"

As he hurried from the bungalow he heard the squadron leader on the telephone. With an effort he switched his thoughts from his stricken chief to the tremendous task ahead. He would be responsible for the remainder of the Pluto expedition, for controlling it and bringing it to a successful conclusion. On his decisions could well depend success or failure, safety or disaster.

He was very quiet as the launch chugged toward Wilingili.

"Help me, please, God," he prayed in his mind.

9

News of the director's illness had reached the Control staff. Chris guessed that Squadron Leader Lambert had been on the phone while he was on his way. A number of the senior scientists were obviously worried by the absence of their leader at this critical moment. Chris squared his shoulders as he entered the building. He felt that an impossibly heavy weight was on them, but he was determined to do his best, if only for the sake of his distant friends.

Instead of going to his own desk, Chris sat himself at Sir Billy's, and his first job was to get the latest information about the state of things in Pluto One. All kinds of data were placed before him, but the items with which he was most concerned referred to the physical state of the crew. The readings showed plainly that their temperatures were rising as planned. Pulses were strengthening and their respirations were now measurable.

"How long?" Chris asked crisply.

Dr. Rosenberg knew what he meant.

"They should be fully conscious in about ten minutes," he replied.

"Strange," Chris mused, "how we continue to think of their time and ours as the same. Yet if all has gone well, they must have recovered several hours ago."

The minutes dragged by. Chris tried hard to focus his thoughts on other aspects of his heavy responsibility, but it was no use. As far as he was concerned, the most important thing of all was to learn that his three friends were alive and well. Once he knew that, he could concentrate on the rest of the job.

Everyone in Control was sharing the tension of the moment. Ears were strained to detect voices through the crackle of static coming from the loudspeakers. Eyes wandered constantly to the ever-changing figures of the chronometer.

The time came when Pluto One should have called. There was nothing. Yet the monitors linked by radio to the bodies of the three astronauts had definitely revealed that they were each returning to life. Why, then, hadn't Morrey reported as soon as he was conscious?

Now every minute seemed like an hour, and many glances were cast in Chris's direction to see how he was reacting. It was no use calling out over the radio to ask if the crew was all right. The greetings and messages which, it was hoped, would have been received by the crew on reawakening, had been sent out hours ago. All that the astronauts' friends on Earth could do was to endure and hope.

Then it came! Twenty-five agonizing minutes after it had been expected, there came the sound of a human voice. Terribly distorted by the fantastic distance it had traveled, the voice was just recognizable as Morrey's. The listeners almost ceased to breathe as they strained to catch every word.

"Pluto One calling," Morrey's voice said. "All the crew are—" Then there were noises that made reception impossible for a few minutes.

But it was enough. Morrey had recovered and his interrupted message could only mean that the others had too! Chris almost fainted with relief. At least his friends had survived the stresses, the journey, and the hypothermia. Even now they must be working on the instructions that Control had long since broadcast.

This was perfectly correct. As the AHA had clicked into action, the temperature beneath the transparent covers was gradually raised and the astronauts had shown signs of returning vitality. One by one they had opened their eyes, and each had vainly tried to decide whether their journey was almost over or had not yet begun. The chronometer above them first gave them the answer to their questions.

"Are you both awake?" Morrey asked as he began to unbuckle his fastenings.

"Never been to sleep," Tony replied testily. It annoyed him to know that, even after many sessions, he was still unable to detect the difference between the beginning and the end of a period of hypothermia.

"Have we arrived?" Serge asked, likewise freeing himself from his harness.

"The covers are up, and if we aren't near Pluto, then the chronometer is haywire," Morrey declared, swinging himself from his contour couch.

But the most convincing proof that their journey had been almost completed while they had been unconscious came as Morrey floated across the compartment. They were in free fall, that weightless state when ship and crew were coasting along without resistance to gravity. A moment before it had seemed that terrestrial gravity held them down while they waited for blast-off. Now they were moving freely, as the nuclear motor had completed its job.

Tony, and Serge too, began to float about the compartment and to bump into each other. It took the astronauts a few minutes to get accustomed once again to the strange but exhilarating sensation.

"Let's go into the cabin," Morrey said. "Then we must get a report off to Control."

"Yes, and I want to see what Pluto looks like," Tony chimed in.

The astronauts propelled themselves toward the compartment door, grabbing hold of a handrail to check their weightless flight. Serge twisted the catch and they gazed through the opening into the main cabin.

"Something is loose," Morrey said at once.

The cabin was but faintly lighted from a pale light that was coming from the spaceports. There was no electric light illuminating it as there should have been when the door from the hypo compartment was opened. But even in the faint light it was possible to see several vague shapes floating around. Something had broken loose. They must assess the damage at once.

First—some illumination. Tony made his way quickly to the locker which he knew contained a portable battery-operated light. Because of the long hours spent in familiarizing themselves with every nook and cranny of their ship, Tony was able to put his hand, without hesitation, on the piece of equipment he wanted. He released it from its fastenings and switched on the power.

Even before Tony's light came on, the radio had been crackling. Calls from Earth were coming in, for Control expected that by now they should all be conscious. It was a temptation to Morrey to reply immediately, but he felt that they must ascertain first if there had been any damage to the cabin. So as soon as Tony's light was switched on the astronauts gazed about them urgently.

The situation wasn't too bad. A camera and a jet gun had broken loose from their moorings and had been careering about the cabin. A couple of dials were splintered, but the instruments were still readable.

"I can get these things anchored down pretty quickly," Tony assured his companions, "but let's have a look at the light."

Here again the damage was simple. Either the camera or the jet gun had collided with the light bulb and had cracked it. In a matter of less than ten minutes Tony had replaced it, and the cabin was again flooded with light. Then he improvised some fastenings for the two pieces of wandering equipment. They could be examined at leisure to see if they had been damaged.

Meanwhile the radio had been repeating its message. After greetings to the crew it consisted mainly of a string of instructions for the maneuver of turning the ship into orbit around Pluto.

"Gosh! We haven't looked out of the window," Tony suddenly exclaimed.

It was true. The astronauts had been so preoccupied with assessing the damage to their cabin that they hadn't thought to take a look outside. Would they see Pluto? What would the frozen planet look like? Would they catch a glimpse of the mysterious Planet X? There was a scramble to the observation posts.

Because of its distance from Earth, Pluto can be observed only by powerful telescopes. Even from Lunar City, under perfect viewing conditions, very little detail about the planet could be seen. But now the spaceship should be on its very doorstep. The astronauts should be able to see the sun's most distant satellite as no man had seen it before.

There it was—a pale ghost! Through their observation posts the crew saw their objective. It seemed very much like a dimly lighted edition of the moon. Those faint markings that they could see might be mountains, craters, and dried-up seas. They must go closer to have a look.

"Gee! I forgot the radio," Morrey suddenly exclaimed, tearing himself from the window. Absorbed in gazing on the small frozen world outside, he'd omitted to report to Control. The radio was still churning out its monotonous greetings and instructions. Morrey switched on the transmitter and took the microphone.

The delay in transmitting messages and receiving a reply made conversation impossible. It meant that broadcasts were stiffer and more formal than on shorter spaceflights. It was hard to make a joke when you had to wait twelve hours for the reaction. So after reporting that all the crew members were active, and that only slight damage had occurred during the flight, Morrey rapidly described their first view of Pluto. He ended by sending greetings to Sir Billy, Chris, and all their friends at Control. As the voice from distant Earth kept repeating the first message, Morrey sent his own several times.

"That ought to do it," he said after the sixth repeat. "Let's hope Control doesn't keep on repeating their message for too long. Now to work."

Instruments in the cabin, which fortunately were working perfectly, informed the crew that their ship was 850,000 miles from Pluto, and that they were cruising toward it at the modest speed of 75,000 miles an hour. Control had been telling them that they must make a slight correction to their course. Instead of heading straight for the center of the planet, the spaceship must aim for the rim. A burst from one of the laterals would do this.

Then there was the problem of decelerating the ship still further so that it could go into a planetary orbit. At its present speed Pluto One would shoot right past its target and move on into deep space, where it would be lost forever. For this reason a chemical engine could be brought into use. Its nozzles, situated around the outer rim of the atomic thrust chamber, would decelerate the ship at a much gentler rate than the nuclear motor would have done. The crew could easily tolerate the stresses the chemical motor would generate, for they had been used to them ever since they had become astronauts.

With Serge sighting their objective through a calibrated telescope, Morrey calculated the lateral thrust required to direct their ship from its present collision course. It was Tony who actually fired the small rockets that made the correction to their path. Now, if all went well, the ship should pass within four thousand miles of the surface instead of crashing into it.

Ten minutes' work on the instruments, a few questions asked of the small on-board computer, and the crew knew that Pluto One's new course was correct. Now all they had to do was to slow down their ship's velocity still more.

Tony was the most active of the trio in preparing for this operation. It was his job to check all valves and pumps that would control the flow of fuel and oxidant to the firing chambers. If one failed to function it could mean unequal thrust, which would send Pluto One rolling end over end. He had a little trouble with one valve and had to take it apart.

"That does it," he declared with satisfaction as he replaced the last part of the faulty valve. He collected his tools, which were floating weightlessly about him, and returned them to their rightful clips in the tool panel.

"All we have to do now is to choose the right moment," Morrey observed, "so what are the latest figures?"

"Seven hundred and ten thousand miles, and seventy-five thousand five hundred," Serge replied.

That meant that Pluto One had considerably reduced its distance from the planet, but had slightly increased its velocity under the influence of the planet's gravity. For the next two hours, the crew took a series of readings, sufficient for their computer to work out when they must fire the chemical rocket. As they had to wait just over four hours, Morrey agreed to Tony's pressing suggestion that they should eat.

As the astronauts ate their special space food, they felt drawn toward the observation posts to take a closer look at the pale planet outside. Generally speaking, it was what they had expected, as far as the faint light would let them see. The surface seemed pitted with craters and crossed with sharp ridges, which is typical of bodies without an atmosphere.

Though at their first close look Pluto seemed similar to the moon, Mars, and a number of the larger planetary satellites, an even closer inspection would undoubtedly reveal special characteristics. Early photographs of the Martian surface had revealed what looked like lunar features. A landing had been necessary to discover how wrong the first impression was. Morrey was determined to get an even closer look at the surface of Pluto.

And what about Planet X? Was there really a small, dense body beyond the orbit of the solar system's most distant known member? The crew searched that portion of the heavens that was visible to them, but there was no clue.

Periodically one of them would break away from the observation post to look at the instruments. Pluto One, steadily increasing in velocity, was rapidly approaching its target.

"Let's get some rest while we can," Morrey suggested at last.

10

Chris himself broadcast the next message to his friends. After saying how relieved he was that they were all fit, he asked for fuller details about the damage to the cabin. The information was needed so that measures could be taken to avoid a repetition of the accident in any future expedition. Then he felt he must mention Sir Billy's illness. Otherwise Morrey and the others would wonder why the director himself had sent no message. Finally he wished them well in the important task of getting into orbit. He would like a report, giving altitude and velocity, as soon as this had been successfully accomplished.

Chris returned to his desk. Everything seemed to be going exactly according to plan, and for this he was very grateful. Had anything been amiss, he would probably have had to make some critical decisions in the absence of Sir Billy. Not that he would shirk the responsibility, but it was still a relief that such a situation hadn't arisen—at least not so far.

"Ah, Betty," Chris said, turning to the girl who had just come up to him. "How is he?"

"Father will be all right," Betty assured him. "The doctor has shot him full of penicillin and sent a couple of orderlies along to look after him. He'll be around again in a few days."

"I hope so," Chris breathed fervently, and added to himself, "The soon the better."

"How are things here?" asked Betty. "He'll want to know as soon as he wakes up."

"Tell him everything is fine," Chris answered. "I'll go along myself to give him a full report as soon as the doctor says I can."

"Let's move," Morrey said briefly to his companions. Their time of relaxation was over, and Pluto One must now be turned into orbit. Without the help of Control—such help would be hopelessly late anyway—the men must rely on themselves and the on-board computer. Like a human, the computer must have something to feed on before it could produce results. Thus the machine was supplied with mountains of data from the spaceship's instruments, which it digested in seconds. Morrey read the instructions that the computer spelled out and gave the necessary orders. If all went well, the ship would enter an orbit some ten thousand miles above the planet, and should take three and a quarter hours to make each orbit.

Now the chemical motor was used again to bring the velocity down to the required level. There was a margin of plus or minus forty miles an hour in which the maneuver could be made. Any speed above or below this would result in a different orbit, and might even take the ship too close to the planet or cause the path to be so elongated that it was useless.

The crew went about their tasks with the trained efficiency that was expected of them. Even the well-known voice of Whiskers squawking out over the loudspeaker elicited only a few ribald remarks as the astronauts paused, but briefly, in their tasks. Tony did snatch a few seconds to mouth an insulting message into the microphone.

Morrey had set the timing device that would control the length of firing of the chemical motor. On its accuracy depended the success or failure of the whole mission, and, of course, the safety of the astronauts. All three retired to their contour couches, ready for the shock of the motor's thrust.

It came exactly as expected. The men were forced into their couches as the powerful motor caused the ship to decelerate heavily. After what seemed an age, but actually was less than a minute, the motor shut off and the pressure vanished. Once more the astronauts were weightless as their ship cruised along in free fall.

They all rushed to the spaceports and to check the instruments. Pluto One should now be in orbit, or nearly so. If their observation had been correct and the firing had been accurate, the ship should have been caught by the planet's gravity and held to a circular path.

The pale planet lay beneath them, its craters and ridges plainly seen in the ghostly light of the tiny, distant sun. Instruments showed that the ship was some two hundred miles nearer to the surface than had been planned—a small-enough error that would make little difference. Pluto seemed to be moving slowly beneath them, though they knew, of course, that it was their ship that was moving steadily around the planet.

Serge made an observation of a cluster of craters so that he could look for the same feature when they next passed over. It was important that they should measure the time taken for an orbit. When they had that, they could pass the information on to Control.

"The infrared is very weak," Tony observed.

He'd switched on a scanner that worked on infrared radiation. It should have shown features that could normally be seen even in the dark. But Pluto was so far from the sun that its radiation, like its visible light, was extremely weak at this farthermost point in the solar system. The only way to observe the planet in any detail was by radar, when the spaceship itself emitted pulses that were reflected back and then converted into a form of picture by the computer.

Tony switched to radar and also connected up the television transmitter. This would enable the radar images to be seen at Control as well as by the astronauts. They would give a commentary on what they saw, for it would be received on Earth at the same time as the television picture—six hours later.

So the crew settled down to the long task of observing, describing, and recording the Plutonian landscape. And what a dreary scene it was. No water. No atmosphere. Almost absolute zero temperature. A scarred and wrinkled skin that was pockmarked with numerous craters of all sizes. As he looked, Tony shuddered. What a desolate place Pluto was. He couldn't imagine a more hostile environment. If any astronauts were stranded on Pluto, their end would be certain and swift.

A moment of excitement came.

"There they are!" Serge suddenly called out.

The others knew what he meant. They could all see the same family of craters that they had noticed before—the ones they had chosen to help time the duration of their orbit.

"Three hours, eleven minutes, ten seconds," Morrey announced calmly. It agreed closely with the predicted time; the small difference was due to the ship's being slightly closer to the planet than had been planned.

For another two complete circuits the crew stuck to their task. Because Pluto One was drifting slightly, they did not cover exactly the same ground in each orbit. However, this change in position did enable them to record a broader slice of the planet's surface than they could otherwise have done.

"Hey! What do you think about this?" Tony called out suddenly.

He was indicating the instruments that recorded details of their orbits. One of them, which registered the altitudes, had a stylus that drew a line on a revolving paper drum. The drum had been regulated to coincide with the orbital time, so that each time the spaceship completed a revolution of the planet, the drum would also complete just one revolution. So the line drawn by the stylus showed the altitude at every point in the orbit.

Morrey and Serge floated over to their friend and looked at the recording. The line on the paper drum plainly indicated that their orbit was changing slightly. Instead of the constant altitude which they had maintained during their first circuit, there was a small, but noticeable, perturbation. At one point the altitude had increased by twenty-five miles, while at the opposite point in their orbit it had decreased by that much.

"Something's pulling us into an ellipse," Morrey announced.

"Planet X?" suggested Serge.

"Maybe. But we haven't spotted it yet. We'll note the point of greatest altitude, the point where we are pulled most out of a circular orbit. This should indicate the approximate area to look for X," said Morrey.

He wasn't worried. They had ample power left in the chemical motor and the lateral rockets to make the necessary correction to their course. But it was something that hadn't been anticipated.

"We'll keep watch in turns," Morrey decided. "You two take a rest and I'll keep my eyes on the instruments."

Tony and Serge didn't argue with their leader. They were both feeling the strain of the last few hours when they had been concentrating intensely on their observations. From now on one or other would have to be on duty. Morrey had evidently decided that it would be wiser if they were not all taking their rest periods together.

The next orbit confirmed the previous observations. Pluto One had dipped even nearer to the planet at its perigee, and had again increased its distance at its apogee, the nearest and farthest points, respectively. They could now pinpoint fairly accurately where to look for Planet X—if it was that mysterious body which was responsible. So when the spaceship was approaching the outer part of its elliptical orbit, all the observing instruments were brought into use to locate the unknown planet.

Serge, who was observing through an optical telescope, couldn't pick up a thing. Apart from the distant points of light, the heavens were blank. No faintly lighted planet could be seen. Planet X apparently did not exist. But Tony on the radar scanner had a different result. He picked up a definite echo from approximately the point expected. Morrey fastened on to this and was able to discover that there was something that appeared to be about a quarter of a million miles away.

However, the most amazing thing about this new body was its small size. From the effect it was having on the orbit of their ship, the crew would have expected something at least half the size of Pluto itself. Instead, from the reflected radar pulses, Planet X appeared to be only a few hundred yards in diameter! Yet how could a body so small have sufficient mass to influence the path of

Pluto One, and to have a noticeable effect on the orbit of the planet itself?

Another puzzling feature about Planet X was its motion. One would have expected it to have an orbit around the sun, in which case, being more distant, it would travel more slowly than Pluto and would soon be left behind. Or it should be in orbit around Pluto itself. Neither of these things was happening. Planet X certainly wasn't circling around Pluto. Nor was it being left behind. Instead it seemed to be keeping pace with Pluto on its journey around the sun.

There was still no clue as to its nature and where it had come from. Astronauts were certain that the presence of Planet X was a new phenomenon, for only recently had the orbit of Pluto revealed its possible existence.

Could it have wandered in from outer space and been captured by Pluto's gravity? It seemed unlikely, for then it would be circling around its captor. But the incredible density of Planet X was the most astounding thing. A cubic inch of it must weigh the equivalent of hundreds of tons. There was certainly nothing like that in the solar system.

In words that gave no hint of their astonishment, Morrey broadcast a full report to Earth.

"I wonder what they'll make of that?" He grinned as he completed his message.

At what point should he correct their orbit? That was a problem which now began to concern him. He did not want to use his chemical motor unnecessarily, for though it had a good supply of fuel, it was accepted policy that this should always be conserved as much as possible. However, with each orbit it seemed that their path would be further distorted, and more power would be required to restore it to its original circular shape.

The attention of the crew was divided between observing the Plutonian landscape, watching out for Planet X, and keeping a close eye on their changing orbit. After a time they felt that Pluto had little of interest to hold their attention. One part of the surface appeared very much like any other. The whole planet seemed to be a great globe of frozen rock, pitted with craters and lined with ridges, evidence of volcanic activity countless eons ago.

Planet X was out of range for them during half of their orbital time, and it was possible to get a satisfactory scan only during the fifteen minutes of their nearest approach. All the information they could glean was that this new body in the solar system was some seven hundred and twenty yards in diameter, that it didn't reflect light, that it appeared to be perfectly smooth—and that it was incredibly dense.

"We'll *have* to do something about this orbit soon," Tony declared. "It's pulled us over a hundred miles nearer this time."

For it seemed that each time the spaceship passed between Pluto and the new planet, their path was becoming distorted to an increasing degree. During this last pass the spaceship had been drawn a hundred miles nearer to the strange invisible magnet. This also meant that, because of its increasing elongation, the orbit took them nearer to Pluto at its closest point. If the distortion process was allowed to continue indefinitely, the spaceship would eventually break away from Pluto's gravity altogether, and would be drawn headlong into Planet X.

Morrey agreed that action must be taken to restore Pluto One to its original circular orbit. The on-board computer directed how this could be done, and the crew set about the task.

This maneuver wasn't completely successful. Although the orbit was nearly circular again, it was more than five hundred miles farther away from the planet. This fault could, of course, be corrected, but Morrey didn't think that it was sufficiently important to warrant the consumption of so much extra fuel. For all corrections to the path of the spaceship had to be done by the chemical motor and the lateral rockets, and there wasn't an unlimited supply of fuel for them.

By now messages were coming in from Earth expressing some uneasiness about the pull that this new planet was exerting. It would be necessary to set certain limits to the permissible amount of distortion. Once these had been worked out, they must not, under any circumstances, be exceeded. It was Chris's own voice that informed his friends that they were to break orbit immediately and set course for Earth if they found any difficulty.

From his knowledge of his friends, and remembering his own feelings, Chris knew that the crew would be reluctant to terminate the mission. Only very strict orders, which he would be prepared to give, would persuade the astronauts to set course for home.

"Not a chance," grinned Morrey. He had no intention of cutting short their exploration unless things became desperate.

11

Chris had called a conference to discuss the strange phenomenon of Planet X and its incredible mass. Control had carefully recorded all the information that the astronauts had sent in. Their own instruments, recording and reproducing the readings aboard Pluto One, had confirmed the orbital distortion. The huge computer was busily measuring the size and mass of the dense planet, and the figures were unbelievable. A second check confirmed that the computer hadn't made a colossal error.

One of the scientists, a look of incredulity on his face, reported that the mass of this amazing lump of matter was at least a hundred thousand tons to the cubic meter. It was hard to conceive how matter could be so dense, unless the atoms were so compressed that there was little or no room between electrons and nucleus.

Careful assessment of the signals received across space showed that Planet X—if it could still be called by that name—wasn't quite spherical, but slightly oblate. Its greatest diameter was 724 meters, and its smallest was but 600. Its bulging part was pointing toward Pluto, as if the attraction between the two bodies were responsible for pulling Planet X from a spherical shape.

"It reflects almost no light, but it does reflect radar pulses," another puzzled scientist reported. "I would have thought that a body so smooth and dense would have made an excellent reflector. Even at that distance from the sun it should be visible from the ship."

"Is it stationary or rotary?" Chris asked.

"It's hard to say," someone else answered. "With the complete lack of surface features it's difficult to judge. However, I guess that it is stationary, because the bulge seems to be all in the direction of Pluto."

"Like a pear with the stalk pointing away from the planet?" suggested Chris, and the scientist agreed.

They went on to discuss the powerful pull that Planet X was exerting on the spaceship, and there was some speculation about how far they should allow the orbit to be distorted. The problem that had to be solved was—when, and how often, should Morrey use his valuable fuel to revert to a circular path? At last there was general agreement that Pluto One's orbit must now be restored. But before the order could be dispatched, the spaceship reported that action had been taken.

"Keep a close watch on yourselves," Chris called back to his distant friends, but he knew that even as he spoke the situation would have changed. More than ever before the astronauts in this expedition were on their own. Control could do little more than be a distant spectator.

When Morrey reported, a few moments later, that the correction had left them somewhat more distant from Pluto, Chris consulted his colleagues just a little uneasily. This wretched Planet X was upsetting their calculations.

"We're off again," Tony announced as their ship came around toward Planet X once more.

What he meant was that the spaceship was again being drawn toward the tiny dense planet. While this wasn't surprising, the strength of the attraction certainly was. There was no avoiding the fact that the orbit was being "bent" nearly twice as much as they had expected. For the first time the possibility of having to terminate the mission entered Morrey's mind, but he thrust it out quickly. Not unless the situation became desperate would he admit defeat. This ship was his first command. He was determined that the expedition should succeed.

Now the shape and dimensions of Pluto One's orbit became the first concern of Morrey and his two companions. A little knot of worry was forming in the minds of each of the astronauts, though of course none of them admitted it to the others. Each time the ship approached Planet X, the tension built up. How much nearer would the dark planet have clawed them?

"We'll have to make another correction," Morrey said shortly. It was the fourth they had made since the sinister effect of Planet X had first been felt. They hadn't expected to use so much fuel. Though they still had enough chemical propellants for many more corrections, they must keep sufficient in reserve to blast the ship out of orbit when their mission was terminated.

"Better get some rest," Morrey said grimly at last. He realized that they were in for a difficult time. How difficult he couldn't be sure. Perhaps, after all, he'd better terminate their expedition. Badly as he wanted it to succeed, he had no right to place the ship or his companions in danger. As he lay on his couch, he turned the situation over in his mind.

What would Chris have done? Morrey remembered many occasions when his friend had been in command, and when a similarly difficult decision had loomed ahead. Chris always placed the safety of his crew first, his ship second, and his own welfare last. Morrey felt he could follow no better example. He would check the supply of chemical fuel, call on the computer to work out how long it would last for orbital corrections, and then, when this point had been reached, blast off for home.

He could see that Serge and Tony were wide awake too. They must be wondering what was going through his mind, so he sat up and told them. Regretfully the other two agreed. Even if they hazarded the ship beyond what was reasonable, it was doubtful that they would discover more about Pluto—or about Planet X, for that matter.

While they lay there, waiting for the next time they must correct their orbit but finding it impossible to sleep, they discussed the menacing intruder from space. For with its incredible density and amazing powers of attraction the new member of the solar system could only spell danger to the Pluto expedition.

Where had it come from, and what was the secret of its terrific gravitational power? And its size! It was small enough to be an asteroid.

"Or a large spaceship," Tony interposed, half facetiously.

He had intended his remark as a joke, but the others took it seriously.

"It cannot be," Serge said thoughtfully. "It is too solid, too concentrated. It must be some natural phenomenon."

"But is it?" Morrey queried. "It may appear solid and dense, but that is because of its terrific attraction. If some other force were at work, then our ideas about the mass of Planet X would have to be altered."

Since Morrey and Serge hadn't laughed at his remark, Tony felt he must make a contribution to the discussion.

"We haven't explained why it's just keeping pace with Pluto and not in orbit around it. A natural object wouldn't behave in this unnatural way," he pointed out.

At the thought that Planet X might be a spaceship from some unknown part of the galaxy, from some strange civilization, Morrey was torn more than ever between curiosity and caution. One part of him would have liked to go as close as possible to the intruder in order to decide on its nature. The other part felt that it would be prudent to break orbit and scurry back to Earth before the "spaceship" dragged Pluto One into itself.

Fresh observations showed that Pluto One had again been drawn toward the sinister, dark object of their discussion. They made the correction and then Tony went off on his routine inspection of the fuel tanks. Less than ten minutes later he was back, pale and shaken. Morrey and Serge stopped work at once, dreading what their friend had to say.

"Tank number three is empty," Tony gasped.

The others were stunned. Tony's brief sentence meant that their third tank of liquid hydrogen—the one they would draw from to blast out of orbit, to maneuver the ship, and to lower it to Earth—was empty. Several thousand gallons of liquid hydrogen fuel had vanished!

"What happened?" Morrey gasped, as all the implications of the disaster came flooding over him.

"I don't know," Tony confessed, wiping his forehead with his hand. It had become unbearably hot in the cabin.

Without another word, Morrey and Serge followed Tony through the narrow passages until they reached tank number three. The dial, which should have shown that it was full of liquid hydrogen, indicated that it was completely empty.

"I've tried the valve," Tony said, "and it confirmed. Not a wisp of gas came out."

That seemed conclusive. Tony opened the valve to show his friends. As he had said, nothing escaped. For one wild moment Morrey had hoped that the meter was faulty. But his hopes were utterly dashed by this demonstration that their precious fuel was gone.

"Meteorite?" asked Serge tersely.

"Must be," Tony muttered. "I'll go outside and have a look."

Part of each of the fuel tanks lay close to the ship's casing. Of course they were well protected by a double layer of metal, between which was a self-sealing compound. Normally, when the ship had the bad luck to encounter a meteorite large enough to penetrate its outer wall, its energy was dissipated before it touched the inner casing. Even if the inner casing was also penetrated—a very remote possibility—the sealing compound would take care of the situation. Only if a fairly large mass, at least the size of an orange, collided with the ship, would there be any danger. And that chance, everyone believed, was unimaginably remote.

Yet it must have happened. There was no sign of fault in the part of the tank that they could inspect. The hydrogen must have escaped into outer space through a fairly large hole. Not if the ship traveled through space for a thousand years was such a thing likely. Yet it had happened.

"Not much use going outside," Morrey snapped. "It wouldn't help."

"How much have we left?" Serge asked.

Tony checked the second half-empty tank and gave the answer. Without needing to work anything out, all three realized that they hadn't sufficient fuel to break orbit.

The full horror of the situation came over them. Because of this incredibly remote chance, the means of returning to Earth had been taken away from them. Even if they used all their remaining fuel, it would be insufficient to achieve escape velocity. Though they could continue for some time to combat the pull of Planet X, they couldn't escape completely from the attraction of Pluto.

In a word, they were prisoners of our most remote planet and its sinister neighbor.

"Let's get back to the cabin," Morrey ordered.

Not that he had any plan in mind, but unless he could give a sharp, short order at that moment, he was in danger of breaking down.

Silently, the three astronauts made their way through the narrow passages and through the hatch into the main cabin. Each stumbled to his own couch and clung to it.

"Now what?" asked Tony after a moment.

"First we must send in a report," Morrey said evenly. "Then we'd better set our computer to work and see if it confirms that we haven't sufficient fuel to break orbit."

"What do you propose if the computer confirms that we haven't enough liquid hydrogen left to return to Earth?" Serge asked.

"There are several alternatives," Morrey replied. "First, we could use the nuclear motor and risk where we go. Secondly, we could make a landing on Pluto and hope to be rescued—which is impossible, of course. Or we could carry on as we are now and try to discover as much as we can about Pluto and Planet X before—well, before we have to finish."

"How long will that be?" Tony asked, battling hard to keep his question as casual as possible.

"We'll see what the computer says, but my guess is that we can keep correcting our orbit for another two weeks or so. After that—well, Planet X will win," answered Morrey with an attempt at briskness.

"Or we could smash down on Planet X right away, and get it over," Serge pointed out.

The other two looked at him in surprise. This would be suicide, something outside the ethics of astronauts. Though several crews had been lost over the years, they had all faced their doom with courage. Sometimes they had even joked with Control right to the very end. It was part of the tradition and training of the fearless men and women who had chosen to face the danger of space.

"I merely pointed out one more alternative," Serge said hastily, his face slightly flushed.

"It isn't even an alternative," Morrey said quietly. "Now let's put Control in the picture."

The uncomfortable moment had passed, and it faded quickly from the memory of the three friends. For a moment they debated the form of their message to Earth. They decided it must be factual and cool. So Morrey took the microphone and sent his message winging its way.

"Let's get something to eat while we decide what is to be done," suggested Tony.

While he was unpacking the meal, the other two fed all the information they could into the computer. Even before Tony was ready, the answer that they had expected came back.

They could never return to Earth.

Sir Billy Gillanders was still not well enough to return to duty. He'd had a fierce argument with the doctor and with his daughter.

"Chris will think you don't trust him," Betty argued, and this was what finally persuaded the director to remain in bed.

So it was that Chris was on duty and carrying the responsibility of directing the operation when Morrey's message came through.

"We have lost all the hydrogen from our number three tank, probably owing to meteoric penetration. There is not enough fuel left to break orbit and reach escape velocity. We are considering the situation."

Everyone in Control was stunned at this news, none more so than Chris himself. After the first moment of shock, the scientists and technicians in Control began to discuss the disaster. But Chris remained silent. For him the news was a double blow. It meant that the expedition, for which he'd had so much responsibility, had ended catastrophically. And that he'd lost his three best friends.

Common sense told him that this cruel mishap would have happened even if Sir Billy had been sitting in his chair as usual. But Chris couldn't help feeling personally responsible.

There was nothing he or anyone else could do to help. All that they could do was to listen to the voices of the three astronauts and to send them what comfort they could until the inevitable end came. Even Whiskers quailed at the task of trying to keep up the crew's morale when they knew that within a few days their lives would end.

"Oh God, what shall I do?" Chris prayed desperately.

And then the idea came.

12

He couldn't let his friends die like that. He couldn't just sit in Control and do nothing. An attempt—albeit a desperate one—must be made to save them.

Chris decided to launch Pluto Two.

Action! There must now be lightning action! Chris allowed himself the luxury of a few seconds to reflect that Sir Billy's absence was fortunate after all. For he was confident that the director would have immediately rejected the plan that had flashed into his mind. Because he was in sole charge, there was no one to veto what he had decided to do.

While Control was still in a hubbub about the terrible news that had come from the spaceship, Chris called an emergency meeting of his chief assistants and section leaders.

"Ladies and gentlemen," he began crisply, "an attempt has to be made to rescue the crew. I have therefore decided to launch Pluto Two, to make contact, and bring them back. Because we don't know precisely how long the crew can last, every second is vital from now on."

"What crew are you using?" Whiskers managed to ask when the first shock of Chris's announcement had subsided a little.

"Myself! I shall go," Chris snapped back. "I am the only one here with a pilot's experience. There isn't time to call in someone else. Besides, if more than one person takes Pluto Two, there will be too little cabin space for the three crewmen of Pluto One."

It was true. The hypothermia compartment, perhaps the most vital part in a voyage of this nature, could be fitted with a fourth couch. But more than that would be impossible. The rescue attempt must, therefore, be single-handed. And as Chris had pointed out, he was the only person with sufficient experience.

There was no one to argue with the deputy director. Whiskers might have voiced a word of caution, but how could he ask Chris not to try to save the three young men marooned in a distant spaceship? So Chris undertook perhaps the most difficult task of his whole life.

The decision having been taken and accepted, Chris became icily calm. A string of clear orders poured from him, and within minutes the vast complex was a hive of activity. One instruction, however, was paramount. Sir Billy, still lying sick at home, was to be told nothing until after the launch. Everyone agreed, for, sick or not, they knew that Sir Billy would come to Control to try to dissuade Chris.

Not until Chris was sure that all preparations were going ahead at the greatest possible speed did he go to the transmitter to send a message to his distant friends. When he did speak to them, his message was simple but adequate.

"Hold on. I'm on my way," was all that Chris needed to say.

Far away in the doomed spaceship the three astronauts were discussing what they should do. Serge's suggestion that they should deliberately crash their ship, and so avoid what would be a lingering death, was not even considered.

"I'm in favor of landing on Pluto," Tony declared. "At least we'll end our days on land. Perhaps we could explore just a little while our oxygen lasts. That way we could send reports back to Control, maybe even get some television pictures to them."

"On the other hand, we could approach Planet X," mused Serge. "Any information we could send back might be much more useful than a picture of Pluto, which, after all, is similar to the moon. Planet X is something completely new. I vote for a close look at it."

"So you wouldn't risk blasting out of orbit with the nuclear motor? No, I agree it's a million-to-one chance that we'd go in the right direction. I'm afraid we'd be blown into space and travel on forever."

"Besides, if we haven't enough fuel to blast out of orbit, how could we ever manage a landing on Pluto?" Serge asked.

"No, you're right there," sighed Morrey. "Then what about keeping our orbit around Pluto until our fuel is gone? That would probably be the most economical use of it."

What he meant was that by expending the minimum amount of power, they would probably stay alive longer if they continued to circle the planet. They had ample supplies of oxygen and food, so their end would come only when the uncanny pull of Planet X dragged them into it.

The argument between the astronauts went on for some time. An outsider would never have guessed from the calm, detached way in which they were discussing the problem that these three young men were trying to decide the manner and timing of their own deaths.

As they expected, Control was utterly shocked at the news. When the replies began to reach them from Earth, the astronauts listened silently. What would Chris think? Sir Billy was still off duty sick, it seemed. So their friend would have the terrible news while he was in charge. They realized what a blow it would be.

But why hadn't Chris spoken to them yet? The only voice they had heard was that of the radio operator, and the poor fellow didn't know what to say. How do you speak to three people who have just been condemned to death? After many awkward silences, the relieved voice of the operator told them that the deputy director was going to speak. So Chris would have something to say to them at last. They wondered what message of grief and condolence their friend would send.

Then, instead of the anguished words that they expected to come from the loudspeaker, they heard a crisp message.

"Hold on. I'm on my way," the voice of Chris said clearly.

"What does he mean?" Tony managed to croak at last. Their brains couldn't be working. They hadn't heard him properly.

"Hello, boys, this is me," the voice of Whiskers said after a short interval. Even over the tremendous distance they could hear the emotion in their old friend's voice, though he was struggling to speak calmly.

"Chris has decided he's going to have a shot at getting you back. He's going to blast off in Pluto Two just as soon as he can. All hell's been let loose here getting ready. I'll let you know how things are going, so keep your chins up," Whiskers said.

Was there really some hope? Surely Chris and the others wouldn't be cruel enough to let them think so if it were not true. Though they fought hard to suppress the wild emotion they felt at the news, they were unable to hold back some of their feelings. Both Tony and Morrey felt an almost uncontrollable desire to weep from reaction. Serge looked the least affected of the three, but he had gone deathly pale and his eyes shone with unnatural brilliance.

"Steady, boy," Morrey managed to say at last in a cracked voice. "We mustn't lose our heads."

They all knew what he meant. To fly a spaceship single-handed was a hazardous undertaking. But to make such a journey to the most distant part of the solar system and to rendezvous with their vessel was an impossible task—almost. The risks to Chris himself were fantastic. Should they let him do it?

"He'll never make it," Serge said hoarsely. "We must stop him."

"No good Chris throwing his life away," Tony agreed stonily. "Tell him we're—we're all right."

It was true. They couldn't let their closest friend sacrifice his own life in a vain attempt to save theirs. Better that one of them should survive than all four be wiped out.

But if there was even the remotest chance of escaping their inevitable death, wasn't it only human to seize it? Shouldn't they let Chris have a try?

"No!" exploded Morrey, for the thoughts of all three had been just the same. "I'm going to stop him."

Even though their message would not reach Control for some time, Chris would have it long before Pluto Two could possibly be ready to leave. Even if they couldn't speak to him, Whiskers would have to convince him that he was not to attempt such a hazardous mission.

Having made the decision, Morrey sent his words out to Earth. He did it immediately, not giving himself or his friends time to have second thoughts. For as death drew near, he feared their courage would be sorely tried.

"Pluto One calling Control," Morrey said, speaking as calmly as he could. "Chris, you must not—repeat not—attempt to come out here. We have discussed the situation and we are unanimous that we cannot agree to your taking this risk. Isn't that so, you two?"

Both Tony and Serge agreed firmly, and then Morrey took over again.

"We'll be all right. We won't panic. There's lots of oxygen and food. When Planet X does get us, it will be clean and swift. So we'll keep up our reports as long as we can. Whiskers, if Chris isn't there you are to let him know how we feel. We just can't let him take such a risk."

"I hope that convinces him." Tony grinned bravely. Deep inside he prayed that he was speaking the truth. At the moment he was at one with Serge and Morrey. But would his courage break as the end drew nearer?

Each of the others had the same fear. Would they crack up before the end? They had been trained to live with disaster, knowing full well that all the while they were in space their lives were at risk, and in the past they had coped with many emergencies quite coolly. But this position was different. What they had to face was not a sudden catastrophe that would destroy them before they even knew it, but the knowledge that their lives would end in fifteen or sixteen days' time! With a little help from their computer, they should be able to calculate the precise moment.

As leader of the doomed trio, Morrey was determined to set an example. If anyone did crack up—and who could blame him?—he must not be the one. He must devise ways of keeping his two companions occupied.

"I don't think we should ask the computer how long we've got," Tony said. "Let's take each moment as it comes."

Morrey and Serge could understand how he felt. While they knew to within a day or so how long their lives would last, the computer would remove all doubt. From it they could find out the number of days, hours, minutes, and seconds they had left to live. It would be much harder to refrain from counting them off as they ticked away.

"Come on, then, let's get busy," Morrey called with forced cheerfulness. His two friends quickly responded.

For the hundredth time in the last few minutes, Chris had felt thankful that Pluto Two existed, and that it had been kept in such an advanced state of readiness, though it was necessary to load the nuclear fuel, fill the liquid oxygen and hydrogen tanks, and put food and water aboard.

Under normal circumstances there would have been a meticulous last-minute check on all the ship's vital parts. But Chris decided to cut this out, for he didn't know how much time he had left. He would risk everything to save his friends. It was an all-or-nothing venture.

Never before had the men and women on Gan worked so hard. Every single one of them felt he was playing a direct part in this fantastic rescue attempt. Though many of them doubted its feasibility, once Chris had made the decision, they spared neither mind nor body.

The Maldivians, too, became infected by the urgency of the situation. When it was necessary for the launches to ply between the islands, they were propelled at speeds they had never reached before. Trucks and jeeps seemed to be driven at several miles per hours faster, and the sweating workers on Pluto Two were supplied with an unending stream of iced drinks.

One of the most difficult tasks was to keep news of the crisis from reaching Sir Billy Gillanders. Chris was determined that his sick chief should not be worried, and Betty supported him. So the orderlies who were looking after their distinguished patient had strict orders to act naturally and not to let Sir Billy have the slightest suspicion that something extraordinary was happening.

To keep up the pretense, Chris forced himself away from his preparations to make a brief visit to the director. Fortunately Sir Billy didn't suspect anything. Probably he was still too ill to notice how strained Chris looked. Chris breathed a sigh of relief when he was able to take his leave, the secret still intact.

When he returned to Gan he found that, even during his short absence on Hittaddu, visible progress had been made. More than half of the nuclear fuel had been loaded and the mobile tankers were busily pumping their loads of liquid oxygen and hydrogen aboard the ship. Food and water were already stowed, and mechanics were on the point of completing the installation of a couch for Chris in Pluto Two's fridge.

"It will be a bit tight," Chris observed as he inspected progress, "but we aren't in this thing for comfort."

Satisfied, he took a launch to Wilingili and hurried to the long room that was the nerve center of the whole undertaking. Here again there was a scene of swift, efficient activity as the hundreds of instruments were prepared, each for its vital task.

"Got you!" Whiskers exclaimed, buttonholing Chris. "Can you spare a minute to listen to this? It's a message from the boys."

Though he could ill afford the time, Chris broke off at once. He must know how his friends were faring, and how they were facing up to their terrifying ordeal. He followed Whiskers into a radio room to hear the recording of the message from Pluto One. It was good to hear Morrey's voice. Chris's face reflected the tumult of emotions that he felt on listening to his friend's gallant attempt to persuade him to give up the rescue bid.

"What shall I tell them?" Whiskers asked quietly. He was watching Chris keenly.

"Tell them that, whether they like it or not, I'm coming to drag them back by the scruff of their necks. If they send in any more drivel like that, I'll have our radio switched off," Chris declared.

13

The astronauts had worked out a routine for themselves. They would have regular periods of work and rest—just as if nothing had happened. They would send in to Control constant reports about their observations of Pluto and Planet X. Naturally they would see to it that these reports were factual and clear so that their friends on Earth would know that all was calm aboard Pluto One.

"Besides," Morrey said to himself, "the need to speak cheerfully and objectively to Control will help all three of us to keep a tight rein on ourselves."

Now the decision had been made that they would see this thing through to the end, that they would face death—whenever it came—together, the crew felt almost lighthearted. Only a keen observer would have known otherwise from their brisk message.

But when the voice of Whiskers came through with Chris's blunt rejection of their request to cancel the rescue attempt, they all felt internal turmoil. They knew that Chris wouldn't consider personal danger when the lives of his friends were doomed to end so soon. So many times in the past all four had risked everything for each other. This was just another opportunity to demonstrate the unbreakable bond between them.

But could they let Chris do this? Was there any argument they could use to persuade him not to come after them? Then Tony thought of Serge's fourth alternative. If they deliberately crashed their ship, there would be no point in Chris's setting out on this hazardous venture. At least they would have saved one life, even if they had hastened the end of their own.

Normally Tony would have hesitated to express this thought, but they were all in such mental torture that he burst out with it. Shaken, Morrey and Serge stared at their young friend.

"It's the only thing that will stop him," Tony babbled on. "You know it is. And it will be better for us than all this waiting. Let's tell Chris at once."

Even though he'd been the first to voice this terrible alternative, Serge was shocked to hear it taken up again. He'd bitterly regretted his former words, and doubly so now.

"We can't do it," he gasped. "We'll be branded as cowards if we don't see this thing through as long as possible. I should never have mentioned it."

"What does it matter?" Tony asked hotly. "I don't care what people think of me if we can stop Chris. What do you say, Morrey?"

Morrey knew that it was up to him to tilt the scale one way or the other. If he vetoed Tony's proposal, Tony would not mention it again. If he agreed, then Serge would have to fall into line. It was a crushing responsibility.

Would it succeed? Would this threat of instant self-destruction be successful in changing Chris's decision? There was no means of putting the idea to the test. This maddening delay in communication prevented normal discussion and consultation. One couldn't argue when a counterargument took twelve hours to get back.

Morrey's terrible dilemma was solved for him. The voice of Whiskers crackled out again from the loudspeaker.

"By the way, you fellows," Whiskers said, "Chris tells me that he's coming to join you even if it's only to pick up the pieces."

So Chris had guessed what they had been thinking! No doubt he knew them so well that it hadn't been difficult to put himself in their place. What he was saying, in effect, was that he would still come out to Pluto even if his friends had crashed. Without putting it in so many words, Chris had made it plain that no action of the astronauts could alter his intention.

It seemed pointless to argue. Knowing Chris as they did, the astronauts were sure that he would be inflexible. So the only thing they could possibly do was to try to make his attempt worthwhile. They must do all in their power to cooperate, to stay alive until Chris came.

Whiskers' voice came through again. It was a request for a detailed report of their reserves of fuel, oxygen, and food. Control also wanted to know the very latest figures about their orbits. Obviously the intention was to calculate just how long the crew of Pluto One could last out. Was Chris's effort doomed to failure before it started?

The three astronauts did as they had been requested. Accurate information was transmitted to Control, after which they fed the figures into their own apparatus. Obediently the on-board computer punched out its reply. If they continued to make corrections to their orbit on the present scale, the hydrogen should last about fifteen and a half days. After that no more corrections could be made and they would be helpless in the grasp of Planet X.

Fifteen and a half days! Yes, that was how long they had left. By husbanding their liquid hydrogen, they could buy a little more than two weeks of extra life. And after that . . .

Suddenly Tony burst out, "Do you think Chris could get here in time?"

The others hadn't thought about it. Their own voyage had taken that long, and that was counting from blast-off. Pluto Two had by no means been operational when they left. It was quite impossible to fuel and prepare the second spaceship, launch it, and travel to the orbit of Pluto all in fifteen and a half days. Or was it?

"You don't think there's an outside chance he could make it, do you?" Tony persisted.

"No," Morrey declared firmly. "We mustn't get carried away because Chris insists on coming out to look for us. He can't possibly get here in time, so the position hasn't really changed."

Tony swallowed hard. He'd have loved to think that there was just the slightest ray of hope. Common sense told him that Morrey was right. But that didn't stop him from seeking desperately for a tiny glint in the blackness of their future.

Sensing something of what was going on in his young friend's mind, Morrey set his companions to all sorts of tasks. When they had done all he told them to do, he racked his brains for new ones. The news of Chris's rescue attempt was most disturbing. Wouldn't it have been better if he had allowed them to end their days in tranquility, rather than instill in them a faint hope of rescue?

Morrey pulled himself up sharply. Here he was—allowing the same disturbing thought to creep into his own mind. He must cast it out at once. But this was easier said than done. For not only was the natural human impulse—to clutch at a straw—at work, but Whiskers was sending across space a series of encouraging messages that seemed to imply that rescue *was* possible. Morrey was tempted to send back a sharp reply to the effect that he was doing more harm than good. No doubt when Control's computer had analyzed the data they had sent in, it would confirm that of their own. Then surely the fatuous broadcasts would cease.

Whiskers' messages had the greatest effect on Tony. His resignation to the inevitable was melting away, as he listened more and more avidly to the signals from Earth.

"Cut it out, Tony," Morrey was forced to say sharply at last. "Unless our computer is all haywire, we know very well any rescue will be too late."

Serge said nothing. He had been doing some quiet thinking. If Pluto Two could be launched within the next twelve hours—which of course was impossible—it might arrive just in time. By altering the program of nuclear bursts, the ship might be made to travel even more swiftly than their own had. But the risks were enormous and the work involved was great. Still—there might be just a faint possibility. He wouldn't say anything about this till they had heard from Control.

It seemed hours later when Chris's voice came through. They had almost ceased to listen to poor old Whiskers, so busy were they with their own thoughts. But the voice of their friend jerked them to attention. They hung on his every word.

"Now, you men, listen carefully," Chris said over those billions of miles. "We have decided that it is quite possible for me to make a rendezvous. Pluto Two will lift off in six hours from now, and its flight program has been redesigned. We are working on a program of orbital corrections for you so that you can conserve your fuel as much as possible.

"Keep up your spirits, men. I'll need your help in the last stage, so look after yourselves. Can't stay any longer. As you can guess—I'm a bit busy at the moment. See you soon."

Tony gripped Morrey's arm.

"You see," he said, his voice a little shrill, "we're going to be rescued! Chris would never had said that if it weren't true. We've got a chance!"

Serge was pale. Morrey was flushed. As Tony had said, Chris would never have promised to see them soon if he hadn't been fairly certain of success. But hadn't he said that Pluto Two would blast off in six hours? That would mean that at this very moment, their friend would be setting out to save their lives. It was—well, unbelievable! There must be some mistake. But oh, how wonderful if it was true.

It was no longer any use for Morrey to try to suppress the wild hope that they all three felt. Of course, if need be, they would have died bravely. But Chris's words had changed the whole scene. Instead of bolstering their courage to face disaster with what calm and dignity they could muster, they had been plainly told that they could expect to be rescued.

If it was necessary to avoid despair and despondency before, Morrey felt it was equally essential not to get too wildly excited now. After all, there could be a slip. In spite of his confidence, Chris might not be able to make it. Or he could be stopped by a million-to-one chance like the one that had disabled their own ship.

As the astronauts' leader, Morrey had to set an example. He must seem calm and resolute, however he might feel. It was a situation that could easily get out of hand. The nerves of all three were going to be put to a severe test during the next two weeks. Because of the need to make regular corrections to their orbit, they were unable to escape into hypothermia. They must be constantly vigilant and on duty.

Had they been able to talk things over with Control, it would have been a great help. But the strange exchange, with twelve hours between question and answer, wasn't any help. It all seemed too stilted and formal.

Dutifully Morrey acknowledged Chris's message, and promised that when the time came to help, his crew would be ready.

"It's a little dark out here. Hope you find your way," he ended with a brave attempt at humor.

The crew of Pluto One now began to face perhaps the most difficult time of their lives. They must live and work with a great uncertainty hanging over them. Chris would be on his way to snatch them back from certain death, but whether or not he would succeed would remain in the balance right till the end. It would require an iron nerve to keep going, but this they were all determined to do.

"Hey," Tony called out at the end of a period of observation and reporting, "do you know something? Now Chris is coming out here, he's going to have the same time-slip we have. At least his 'present' will be the same as ours."

"Well, we'll all four be in step again." Morrey grinned. "We wouldn't like to be out of joint with our friend, would we?"

Every time a voice crackled over the radio, the hearts of the astronauts beat faster. Usually it was Whiskers, who seemed to be hugging the microphone. Only twice did other speakers read messages. They were instructions about a more refined method of preserving their orbit, and a request for a report on their medical condition. They were to eat and sleep regularly, and also they were to carry out a series of physical exercises, which Control described in great detail.

At last the words that they had all been longing to hear came over the radio.

"Chris has entered the ship," Whiskers said. "Everything is okay for blasting off in thirty minutes."

Thirty minutes! No long countdown for the deputy director! Morrey could imagine the ruthlessness with which Chris had cut through normal procedures, and he would have given a great deal to witness the fantastic activity that must be going on.

Going on? But it had all happened six hours ago.

By now either the launch had been postponed or canceled, or it had met with an accident, or Chris was already well on his way to join them.

Which was it?

14

As Morrey had guessed, the scene in that remote part of the Indian Ocean was indeed fantastic. In spite of the tropical heat, the preparations had gone on without pause. After he had broadcast his message to the crippled ship, Chris had thrown himself with even greater fury than before into his Herculean task. When he was advised by the doctor to take a rest, he remarked brusquely that he'd have two weeks to rest once Pluto Two was on its way.

So the last six hours of the countdown passed, with men and women fighting back fatigue as they raced to complete their tasks against the clock. Whiskers felt that at last he had a useful part to play in this incredible undertaking. He'd appointed himself chief communicator, and rarely left the microphone. When not sending technical messages, he kept up a running report of progress.

At last he was able to send the welcome news: "Chris has entered the ship."

On one of the screens in Control, the spaceship appeared sharply against the brilliant sky, sitting on top of its man-made pyramid. Though it was but thirty minutes since the sun had risen, the heat was already appreciable, and in spite of the air conditioning everyone in the long room was perspiring. Maybe it was the temperature. Maybe it was the tension and strain.

Twenty minutes to go. Still the race against time went on. Inside Pluto Two, Chris, his face showing signs of the terrific strains of the last few hours, was making a last check of his instrument panel and communications. He would be making this outward voyage alone, but when he returned he would have his three friends with him. He would save them—or die in the attempt.

Satisfied that all was well, Chris signaled to the technicians looking in through the open hatch. They returned his wave and wished him well. Then they withdrew—the last human beings he would see until he gazed upon his three stranded friends. The hatch was sealed. He was alone. But there was too much for him to do to waste time thinking about his fate.

At last Chris was able to leave the cabin and climb up into the fridge. There four couches were ready, his own having been squeezed in hastily alongside those for Morrey, Serge, and Tony in this backup ship. Thankfully he lay on his couch and let the apparatus take over. He scarcely listened to the last minutes of the countdown. If there was any delay, he would fall asleep naturally, tired as he was. But he'd already felt the slight chill that he knew was the onset of hypothermia. In a few seconds' time—or so it would seem—he would be near his friends in the distant reaches of the solar system. Then it would be up to him to fulfill his promise to rescue them.

A winking red light in Control indicated that Chris was now frozen. Dr. Rosenberg, who had taken over in the absence of both Chris and Sir Billy, anxiously watched the moving figures of the chronometer, his finger already on the button that would launch Chris into the heavens.

"Zero!"

With a quick movement Dr. Rosenberg pressed the button—and then held his breath.

The men and women in Control felt rather than heard the vast explosion that launched man and machine into space. Though the concrete pyramid on Gan was separated by several miles of sea from Wilingili, they could have sworn they had felt the ground tremble as the nuclear explosion shot Pluto Two into the heavens.

Because of the velocity of its flight, it was impossible to follow the spaceship visually. However, the instruments plotted every second of its trajectory, and the men and women bent over them were soon nodding with satisfaction to see the rescue ship behaving perfectly.

On the island of Hittaddu, Sir Billy felt the tremor that signaled the launch of Pluto Two. He was feeling much better, though extremely weak. Why hadn't Chris been to see him? he wondered. He'd asked the orderly to get a message to his deputy saying that he felt well enough to be brought up to date on how Pluto One was faring. He meant to return to duty in a couple of days.

Now, feeling the earth tremor, wondering why Chris had not been along to brief him, Sir Billy was filled with foreboding. He rang for the orderly.

"What's happening?" he demanded, his feet already out of bed. "Where's Godfrey? That felt like a launch. Come on, man, speak up."

The orderly looked most uncomfortable. Like everyone on the atoll, he was aware of the dramatic events that were taking place. But he'd been given strict instructions that no word of what was happening must leak to his patient. So far he had succeeded in keeping Sir Billy in complete ignorance. But he could see that the convalescent director couldn't be deceived any longer.

"Excuse me, sir, I must telephone," he said. Before Sir Billy could repeat his demand for information, the orderly had rapidly disappeared and was phoning the medical officer, Squadron Leader Lambert. When he returned, Sir Billy was searching furiously for some clothes.

"Where the blazes are my things?" the director demanded. "Has everyone gone mad? Or have I?"

"Gently, sir," the orderly said soothingly as he tried to propel his patient back toward his bed. "The squadron leader will be here in a moment."

Sir Billy shook the orderly off angrily.

"I know I've been ill," he exploded, "but I refuse to be treated like a child. Where are my clothes?"

"I'm sorry, sir," the man said desperately, "I can't give them to you till the doctor says so."

"Get out of my way," the director spluttered, but he was still too weak to push the orderly aside. He could only fume and rage at his monstrous detention. The orderly was intensely relieved to hear the doctor's steps outside.

Before Sir Billy could launch his furious protests and questions, Squadron Leader Lambert anticipated him.

"All right, all right," he said. "Get back into bed and I'll tell you what has happened."

The medical officer was firm, and not until the director, seething with impatience, had been tucked in by the orderly, did he explain what had been going on.

When he had heard the whole story, the director sank back on his pillow. Suppose he hadn't been ill? Could the disaster have been avoided? From what Lambert had said, Sir Billy had to accept that the event that led to the loss of hydrogen from Pluto One's number three tank would have occurred in any case. Would his reactions have been the same as Chris's?

Sir Billy was not a trained astronaut and it would have been physically impossible to go on the rescue mission himself. But would he have agreed to the next-best thing —allowing his deputy to go? Ought one life to be risked for three? Wasn't it better to lose three astronauts and their ship than his deputy director and a second ship as well? With a jerk Sir Billy pulled himself together. Such questions were now purely academic. The thing was decided. It had been decided, in his absence, by Chris himself. All Sir Billy could do was to ensure, as far as was within human power, that Chris's efforts were not wasted.

"Doc," the director began, speaking very deliberately, "I am going to Control. The only way you can stop me will be by sheer physical force. If you attempt this, I shall take the first opportunity of getting away. To keep me here, you'll have to have the door locked and put bars up at the window. Moreover, you'll have to have a guard on duty day and night. Now what is it to be? Do I go to Control, or do you make me a prisoner?"

The squadron leader shrugged.

"I shouldn't allow it, of course, sir. But I don't want you to have a stroke fretting here in this room. You may go on two conditions. One is that we fix up a bed for you over there. The second is that, with me watching you every minute, you go to bed, without argument, the moment I tell you to."

"It's a deal." Sir Billy grinned. "Now may I have my trousers?"

A million miles from Earth, Pluto Two carried its frozen passenger at an ever-increasing speed. Chris lay pale and motionless in the hypothermia compartment. An observer would have found it impossible to tell whether he was alive or dead.

For some reason the messages from Earth were being badly distorted. Listening intently, the crew of the doomed spaceship still couldn't make out what Whiskers was saying. Was he giving news of some holdup in the launch or had Chris blasted off successfully?

Then suddenly the radio cleared.

"Calling Pluto One. Calling Pluto One," the voice of Whiskers chanted. "Don't worry about interference. It's probably been caused by the blast. Calling Pluto One. Calling Pluto One."

Gosh, it was good to hear Earth again. But what was Whiskers talking about? What blast? What was it that had caused the interruption of radio communications? A horrible thought struck the three astronauts simultaneously.

Had Pluto Two blown up? Had their rescue ship, with Chris inside, disintegrated on the ground? Why, oh, why hadn't their friend listened to reason? Then came the wonderful news.

"Pluto Two looks good. She's building up velocity nicely. Distance from Earth approximately one million miles," Whiskers told them.

They could have hugged their old friend in sheer delight and relief. But he was nearly four billion miles away!

"Well, now that Chris and the people on Gan have done their part, we must certainly do ours," Morrey declared happily. Even he had now abandoned all pretense and was yielding to the growing hope that they all felt.

They carried out Control's instructions with meticulous care. Each correction to their orbit was designed to use the absolute minimum of the precious hydrogen. Tony was constantly recording the consumption of fuel and reporting back to Earth.

Day followed day—or at least it did on Earth. For out here on the frontier of the solar system, time was not so divided. Instead it was marked by their orbits of Pluto and their repeated shrinking from the grasp of Planet X. By following precisely their instructions from Earth, they had saved some liquid hydrogen, and had prolonged by some hours their ability to avoid the sinister clutch.

How was Chris getting on? Was Pluto Two on schedule, and were their chances of rescue improving or getting worse? These were the questions that were constantly in their minds. Only by the exercise of the strictest discipline did the crew resist the almost overwhelming urge to keep asking them.

Fortunately Whiskers knew his job. Having lived so long with the astronauts and having nursed them through crisis after crisis, he knew the medicine they needed. Every three hours he gave a report on the progress of Pluto Two, together with the news that radio signals indicated that all was well with its frozen pilot. He also insisted that the astronauts should play a game of chess.

"All right," Morrey agreed when Whiskers' message reached them, "but of course, we have no equipment."

"I can soon fix that up," Tony said, "but who's going to play? I can't."

"Nor me," Morrey admitted. "What about you, Serge?"

"I can play a little," Serge replied modestly. "Most Russians can."

"Then you're the one to challenge our whiskery friend," declared Morrey. "Now what about the chess set. Tony?"

Morrey welcomed the suggestion that they should pass away the time in this fashion. It was rather exhausting trying to keep his companions occupied and happy—especially Tony. Their spells on duty seemed to get longer and longer. Even the rest periods they found burdensome, for who could sleep soundly when the burning question was, Are we going to live or die?

Under Serge's supervision, Tony set to work to make a chessboard and fashion the chessmen. The board was easy, for he had but to cut up a stainless-steel sheet from his stores. Unfortunately they had nothing from which to make the chessmen until he hit upon the idea of bending pieces of wire to the desired shape. It had to be steel wire, of course, because they had to use a magnet beneath the chessboard to hold the pieces in position. At last Morrey was able to inform Control that all was set for the game to begin.

Serge made the first move, and described it over the radio. They now had to wait until they heard what Whiskers would do in return, so Morrey called them to further tasks while the radio waves went their sluggish way.

"Plenty of time to eat, work, and rest," Tony observed, and this is what the astronauts did. Then when the time was approaching for them to receive the chess move from Whiskers, they crowded around Tony's improvised board. The news came through promptly, and Serge moved his opponent's piece on the board as instructed.

"Now what are you going to do?" asked Tony, getting interested in spite of himself.

"This," the Russian replied, as he moved a piece of twisted wire that stood for a knight.

Morrey was watching thoughtfully. How many moves would it take, he wondered, to complete the game? Would there be time to finish it before Chris arrived—or before their ship plunged to destruction?

15

Squadron Leader Lambert had to keep reminding the director about the conditions under which he had allowed him to come to Control. When Sir Billy had first walked a little unsteadily into the instrument-packed room, he had demanded to be put into the picture at once. Dr. Rosenberg and Professor Boronoff quickly described the present situation as their chief sat a little breathlessly at his desk. Then Sir Billy had spat out a string of quick-fire orders, only pausing to mop his face. The doctor, who was hovering nearby, watched his patient closely.

Then Sir Billy jumped up and paced feverishly up and down the long room. He paused frequently before different banks of records and plied the scientists in charge with many questions. At last the squadron leader had to take his arm and gently but firmly propel him back to his seat.

"You'd better have a stretch on your bed," the doctor suggested. "It is ready."

"Not on your life," protested Sir Billy, "there's too much to do."

"I see. But may I point out that, quite apart from breaking the firm undertaking you gave me, you're asking for your fever to come back. And if you get it again, this show will be all over before you return to your senses."

"Oh, all right," Sir Billy snapped, "but I'm going to send a message first, to Pluto One."

Only after the director had sent his greetings and good wishes to Morrey, Tony, and Serge did he allow himself to be pushed gently into the room where his bed had been made up.

"I'm only staying in here for one hour," he told his tormentor.

But it was four hours later before Sir Billy Gillanders awoke.

"Now you just get out of that," Whiskers said triumphantly as he moved his bishop. He thought he was quite a chess player for he had spent long hours playing the game while awaiting the call to "scramble" during the last war.

It was six days later and the game was beginning to get exciting. Every time a move was due over the radio, a little cluster of people gathered around Whiskers. What would Serge do?

"Pluto One calling," the voice of Serge sounded from the loudspeaker. Then he gave his move.

"Check!" he concluded.

Whiskers goggled. Had he been led into a trap? Had he underestimated his opponent? Ah, no. It was a clever move that the astronaut had made, but the wily Whiskers was able to escape. Interest in the game was mounting.

Sir Billy Gillanders was well on the way to complete recovery. The squadron leader no longer had to watch him; Sir Billy had decided that, with Pluto Two well on course, and with the crew of the disabled ship remaining reasonably cheerful, there was little he could do. It would be better to concentrate on getting well again for the critical period of the rescue attempt.

What a pity the game was so slow, Tony thought. He'd never played chess himself, but he was now picking it up rapidly from Serge. Morrey, too, found himself taking part in the long discussions about the next move.

"Hey! Why don't we each have a game?" Tony suddenly said. "I can make another couple of boards and sets."

So it was that all three crew members of Pluto One played long-distance chess games with Whiskers while they awaited the outcome of Chris's gallant rescue attempt.

Even though they became absorbed in the games, the astronauts had regular duties to perform. Control insisted on maintaining the full range of observations. Then there were the periodic orbital corrections to be made, for Planet X seemed determined to draw them into its grasp.

Tony had to keep a very careful record of the consumption of liquid hydrogen, so that Sir Billy could keep a running estimate of their chances of survival.

"It's going to be a very close call," he murmured to Dr. Rosenberg and Professor Boronoff as he studied the latest figures. "The computer people say that Pluto One can maintain its orbit for another sixty hours. After that all the fuel will have gone and the ship will be at the mercy of Planet X."

"And it will take Pluto Two fifty-five hours to reach Pluto One," Dr. Rosenberg pointed out. "It doesn't leave much margin."

"No. If Chris loses any time in waking up, or in getting the two ships alongside, all will be lost," Sir Billy agreed.

"Are you going to tell them?" asked the professor.

"Later," Sir Billy replied thoughtfully. "They're bound to get a bit worked up when they hear what a chancy thing it's going to be. We'll have to tell them, but let's leave it for a while."

Though he hadn't said anything to the other two, Morrey wasn't unaware of the danger. They had handed over to Control, with its giant computer, the task of working out their positions. Serge and Tony were content to leave everything to the scientists back on Earth. They were doing a good job, and if anyone could keep them alive till Chris arrived, they could.

But their leader had been doing his own quiet calculations. Making a pretense of feeding in material for their on-board computer's memory bank, Morrey had asked it how long their hydrogen would last. The machine had come up with an answer surprisingly near the giant computer's effort in Control. Hastily Morrey tore up the tape while the other two were working out Tony's next chess move.

It didn't take Morrey much calculating to realize that, after he'd arrived in their vicinity, Chris had less than six hours to pull off his act. During that time he would have to calculate the position of and approach to the doomed ship. Then he would have to match its velocity. Only when the two vessels were coasting along side by side as closely as possible, could the rescue be made. Morrey and his two friends would have to abandon ship and leap across space to the rescue craft. Unless Chris had brought Pluto Two within a mile or two, this would be a very risky business. There was a limited amount of power in the jet guns that they would use to guide them to the lifeboat.

"What do you think, Morrey?" Tony demanded, indicating his board.

Morrey pulled himself together sharply. Whether he was right or wrong, he wasn't going to tell Tony and Serge about the knife-edge on which their lives were balanced. Probably Control had adopted the same attitude, and he wasn't going to let Control, or his companions, know that he, too, could do some figuring. So he tried to concentrate on the problem of what Tony's next move should be.

"This fellow's hot," a worried Whiskers declared to his little knot of spectators. Serge's last move had just come in, and Whiskers had moved a queen in obedience. Now that he had all three astronauts to contend with, Whiskers was really doing his stuff. It had been mutually arranged that with three games going on simultaneously, the suspense of waiting twelve hours for a countermove would be removed if the play were staggered. Thus Tony made his move and got his reply four hours after Serge, and Morrey made his move another four hours later still.

Whiskers, then, had to make a decision every four hours all around the clock. It was somewhat wearing, but at least he knew he was helping his distant friends to pass away the hours of suspense. He'd have no difficulty, he knew, in beating both Tony and Morrey. But the Russian seemed to be gaining the victory. Ah, well, there were only another thirty-six hours to go.

Pluto Two remained dead on course and was rapidly decelerating. Chris hadn't moved or shown any sign of life since he'd been frozen. In less than twenty-four hours the next critical stage of the rescue would begin, for then he would be around to take over manual control of his ship.

"Checkmate!"

The dreaded word came over the radio triumphantly as Serge announced his latest move. Whiskers, perspiration streaming down his face and his moustache drooping slightly, studied his board in a desperate attempt to evade defeat. But it was no use. Serge had him cornered and he had to concede victory to the astronaut. He sent a message of congratulation winging its way across space, and ended with a warning that Serge wasn't to help the other two.

Both Tony and Morrey felt elated that their colleague had beaten the redoubtable Whiskers.

"Too bad we didn't have a bet on with him." Tony grinned. "Still—we can get something out of him when we get back."

"When we get back!" Morrey felt a twinge of concern as Tony used those confident words. He had to admit that the possibility of not being rescued in time had faded from his friends' minds. The knowledge that Chris was on his way, the routine tasks and exercises, the increasingly exciting chess games had all helped to blur the danger that they were in. Even he himself, Morrey admitted privately, hadn't been as anxious as he might have been. It was as if they had all been under the influence of a drug.

Tony's game was the next to finish.

"There, that'll teach you a lesson," Whiskers had roared triumphantly as he polished off the inexperienced Tony.

"That's one all."

Because the other two games were over, the three astronauts concentrated on the remaining one. Whiskers had insisted—and they had all promised—that Morrey should receive no help. It was hard for Serge to remain silent when Morrey made his fatal mistake. Only after the American had broadcast his move, did Serge show the other two how Whiskers could win the game. And sure enough, twelve hours later the contest was over. Whiskers had won two out of three contests.

"No time for another game," the voice of Sir Billy came over crisply. He sounded very much better, and the astronauts guessed that he was feeling much more like himself again.

Now that their preoccupation with the contest with Whiskers was over, its druglike effect was beginning to wear off. The almost empty fuel tank was a reminder of how precariously their lives were balanced. As Morrey once again made a correction to their orbit, he wondered just how many more he could do. They were now much closer to Planet X, and as they came nearer, the sinister pull of the mysterious body would grow ever stronger. He dreaded the moment when he would put his finger on the firing button for yet another orbital correction and the motor would fail to ignite. Then, indeed, they and their ship would be doomed.

Control too was anxious, perhaps even more so than the astronauts themselves. Sir Billy and the other scientists knew how wafer-thin the margin was between success and utter catastrophe. They knew to within a few hundred miles just where the two ships were. Pluto Two was decelerating rapidly for its final approach. Pluto One was limping along in an ever more elliptical orbit.

For the millionth time—so it seemed—Sir Billy fumed at the tardiness of radio communication. With the signals from Pluto One about six hours out of date and those from Pluto Two almost as much, how was it possible to know what was really happening aboard the two vessels? The computer could predict, but its forecast was based on a projection of known facts. Suppose something unexpected happened! The computer hadn't been able to anticipate the damage to Pluto One's fuel tank.

"The AHA should be activated now," Dr. Rosenberg told his chief. If all was well, at that precise moment the automatic instruments controlling Chris's hypothermia would come alive and would begin the process of restoring him to life. Not for some time would they know if he had regained consciousness—far too late for Control to take any useful action.

It took a tremendous effort of will for Sir Billy to tear himself away from the vigil in Control. Reason told him that they couldn't learn anything of significance for some time, so he might as well rest, ready for the critical time ahead. Yet he felt that somehow he would be deserting his post if he went back to his bungalow at that moment. But a whispered consultation between the doctor and Betty Gillanders took place behind his back, and a few moments later Betty was guiding her father firmly toward the motor launch.

The three men in Pluto One also knew that soon Chris should wake up, and because, in astronomical terms, they weren't far away, they would know much sooner than their friends on Earth. No doubt, if all was well aboard Pluto Two, Chris would broadcast to them the moment he was able to. Until then, they must try to control their mounting anxiety.

As they completed yet another orbit around Pluto, Tony called out the news.

"I've got him on our screen," he announced excitedly. Morrey and Serge floated over to look.

True enough, they could see the blip of their approaching rescuer on the radar screen. That little speck of light represented all their hopes for survival. It was the image of the spaceship in which their friend was making his gallant effort. Even if Chris didn't succeed, they all prayed that nothing would happen to him. Soon, very soon, they would know.

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Chris opened his eyes. It seemed that he had never closed them since climbing onto the couch. But the transparent cover was up, and he guessed that his hypothermia was over. When he released himself from the straps that were holding him on the couch, he had additional proof. He floated gently. He was weightless!

So Pluto Two had completed the greater part of its journey. It had crossed the vast distances of space and had also completed its deceleration. Now it was cruising along in free fall, awaiting Chris's guidance to place it in orbit around Pluto. Then he would have to find and approach his friends' damaged ship—and he knew how difficult that would be.

Chris swung himself off the couch and looked around the hypothermia compartment. Beside his own couch on which he had spent—was it two weeks?—he saw the three empty ones awaiting his friends. He made a silent vow that he would never return to this part of the ship unless he was accompanied by Tony, Morrey, and Serge. He went to work.

He floated over to the hatch and hauled himself down to the main cabin. First he must make a quick inspection to see if all was well, then set the instruments to work and try to speak to his friends on the radio.

Though it seemed but an instant since he had said good-bye to Earth, he knew that fourteen days had passed. What had happened to Pluto One during that time? In two weeks much could take place. Pluto One might have been unable to withstand the pull of Planet X, or some other catastrophe might have overtaken his friends. He must contact them as soon as he could. Then he must report to Control.

With deft movements he prepared the transmitter and waited impatiently for it to warm up. Almost before the process had been completed, Chris was calling into the microphone.

"Pluto One. Pluto One. This is Pluto Two. Can you hear me?"

Again and again he repeated the call. He shouldn't have to wait long for an answer. His signals, if they were being received, hadn't far to travel. So why hadn't Pluto One replied?

The answer was simple. Before Chris had awakened, the blip of light had moved off Pluto One's radar screen. The ship had moved behind the planet and was out of radio contact. Morrey and his companions waited eagerly for their vessel to emerge, and even before the orbit was completed, Chris was calling over the radio.

"Pluto Two calling Pluto One. Pluto Two calling Pluto One."

The electrifying words blared out of the loudspeaker. It was the voice of Chris, and it released a torrent of emotion in the cabin of Pluto One. As the astronauts laughed and almost wept with relief, they babbled incoherently back to Chris. What matter if all they said was nonsense? They were speaking to their friend who had come to rescue them.

Eventually emotions calmed, and then the exchanges became brisk and businesslike. There was a job to be done, but it was a difficult one. It was an undertaking that would require cool nerves, sound judgment, and quick action. The astronauts and their rescuer became once more the cool products of long years of training.

There were over 111,000 miles separating the two ships. It would be the task of Pluto Two to close the gap. Morrey and his crew were unable to help. All their resources must be conserved for evading the gravity of Planet X. So it was that Chris, his instruments firmly locked on his objective, fired his chemical motor.

He felt the kick as the thrust built up. Pluto Two sped toward its disabled companion, and the distance between them decreased. Morrey was able to report that now less than one hundred thousand miles lay between the ships. Then Pluto One swung once more behind the planet after which it was named.

"Time for another correction," Morrey said, looking at his instructions from Control and at the chronometer.

"You know this is the next-to-last one?" Tony asked.

An instant chill fell on the trio. Were they so close to the end of the hydrogen? In the excitement of hearing Chris and watching his approach, they had ceased to worry over the most critical factor—their means of keeping their ship flying. If Chris was so near and they crashed just before he reached them, it would be the most cruel thing that could happen. Had they lived this long, had they come so near to rescue, only to perish at the very moment help was at hand?

The next hour was the grimmest the three astronauts could ever remember. Because they were circling the planet on the side away from the rescue ship, they were completely out of touch with Chris. When they came into radio "sight" of him again, where would he be? They must let him know at once how close they were to disaster. Perhaps he could still reach them in time.

After they had made their orbital correction—the last but one—they settled down to await the moment when they could speak to Chris. The minutes crawled past, and they didn't do much talking. There seemed little to talk about except the nearness of disaster, and if they allowed themselves to get on that subject, they weren't sure they could preserve their calm.

Control couldn't help. They were outside this struggle—too far away even to be aware of it. If Pluto One did send a report, it couldn't reach Earth until their drama was over. Long before Control had received their last words, they would have been rescued or killed, and they didn't know which.

"I've got him!" Tony cried after what seemed an eternity. There was the suspicion of a tremor in his voice. Then their friend spoke to them.

"Hello, you all," Chris said cheerfully. "I'm on my way in. Get your suits checked up, and see that your jet guns are charged. I'll see how close I can get."

"Hello, Chris," Tony called back. "You don't know how pleased we are to hear you. Morrey wants to speak to you."

The crew leader took the microphone and in quiet, almost unemotional tones informed their rescuer about the fuel position.

"So we've got three hours left, I guess," Morrey said. "Think you can make it?"

With less than a second's hesitation, Chris replied that he could, trying to put as much conviction as possible into his voice. The truth was that he couldn't make it. He couldn't get Pluto Two into position in less than four hours.

Chris turned from his radio to survey his dials and screens yet again. While Pluto One had been out of sight he'd been working out his approach program. As a result he knew that it would require four hours to continue deceleration, maneuver into Pluto One's orbit, and bring the two ships close together. If Morrey and his crew could last only three hours, he would be too late. The horror of the situation struck Chris forcibly. He'd be within less than ten thousand miles of the disabled ship when Planet X dragged it out of orbit. Had he traveled four billion miles just to witness the destruction of his friends?

No, it couldn't be! Somehow he must get to Pluto One much sooner. The carefully worked-out approach program must be scrapped. Caution must be thrown to the winds. He would risk *all* in the effort to save his friends. Chris's face set grimly as he punched the button that would double the thrust of the chemical motor.

The island of Gan was bathed in brilliant moonlight. A warm breeze whispered in from the Indian Ocean. The fronds of the palm trees waved gently. It was a peaceful tropical night.

But not in the huge concrete building on the nearby island of Wilingili. In spite of the efficient air conditioning, the crowd of men and women were hot from the heat and excitement. Most anxious of all was the director of UNEXA, Sir Billy Gillanders.

"What do you think, Billy?" Whiskers asked him.

"Everything depends on how long Pluto One can hold out," the director answered. "It's going to be a near thing, from the latest data we're getting."

"And if the crew crash, will Chris come back?"

"I don't know," Sir Billy confessed. "I wouldn't put it beyond him to attempt a landing. You know how desperate he is."

Secretly Morrey wasn't deceived by Chris's confident assurance. But he wasn't going to let Tony and Serge know about his doubts. It was hard to keep cheerful when he knew that disaster was 99 percent certain within a few hours.

Over the last few days the orbit of Pluto One had become more and more elongated. Because of the plan to conserve as much fuel as possible, Control had decided that it would be uneconomic to restore a circular orbit each time. But now the permissible limit of elongation had been reached and this next correction, which would be the last, would restore the spaceship to an approximately circular path around the planet.

The distortion of the orbit, caused by the constant pull of Planet X, had caused Pluto One to come at times very near the planet Pluto. To occupy his crew, Morrey had ordered intense photographic recording of as much as possible of its surface. But no new features were discovered. As they had already seen, Pluto seemed to conform to the general pattern of airless satellites, being pitted with the usual rash of craters and ridges. It would have been interesting to land and take a sample of rock back to Earth. From that the past history of the planet could have been deduced, including its age. Morrey remembered the still unresolved argument about whether the planets had been created together or in sequence. A rock sample from the most distant of them might solve that question.

Of course a landing had been out of the question from the moment the loss of fuel had been discovered. But the elongation of their orbit caused by Planet X had given them an unexpectedly close look at the frozen waste below.

Now the time that Morrey had dreaded arrived. They must use the last of their fuel and make the final correction. Both Serge and Tony must realize how thin their chance of rescue had become.

Of course they did. Each, separately, had thought that only he realized that Chris could scarcely reach them in time. Serge had had no need of the on-board computer to do his sums. His quick brain had long ago worked it out that Pluto Two couldn't arrive until after their orbit had been destroyed. Tony had watched the diminishing fuel, and had no illusions about how long their ship would last. Yet it was typical of these three young men that none had revealed his knowledge to the others. Each wanted to delay the shock to the other two as long as possible.

They made the last correction as efficiently as ever. But in this case there was no need for Morrey to shut off the chemical motor. It simply spluttered out as the last drop of liquid hydrogen was consumed. The three astronauts faced each other, and then they realized that all of them had known their position all the time.

"You—you know?" Tony asked.

"Of course," Morrey said, scarcely above a whisper, and Serge nodded without speaking.

Chris let out an involuntary groan as his body took the full force of the chemical motor's thrust. Not only was this far greater than had been planned, but he hadn't had the benefit of preflight training, which tightened up the muscles and enabled the astronauts to be subjected to strains that they would otherwise have found intolerable. Believing that his days of spaceflight were over because he'd been promoted to deputy director, Chris hadn't been prepared. Now his body was paying the penalty, as Pluto Two was forced along under the powerful thrust.

But it didn't matter. No matter what he had to suffer, Chris was determined to do his utmost. He was prepared to go beyond the limit of human endurance in his desperate bid.

Because of the terrific thrust, he was unable to continue the observation on his instruments. He must trust to his own judgment about when the moment came to cut off the motor. It would be largely guesswork. If he left it on too long, Pluto Two would become uncontrollable. If he switched it off too soon, he would be unable to reach his friends before they crashed to their death.

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"We've used all the fuel, Chris," Morrey called over the radio. "You won't be able to make it."

He had succeeded in keeping his voice quite calm. No one could guess the fight he was having to subdue the flutter he felt within him. It would distress Chris terribly if he thought that his three friends were going to pieces in their last moments. No doubt he'd feel that he'd failed them. To put on a brave show was the only thing left for the three to do.

"C-can't talk," a gasp came back over the loudspeaker.

Morrey and Serge looked at each other in alarm.

"What's happened to him?" Serge asked.

"Simple," Tony replied with a faint smile. "He's under thrust."

That was it! Chris must have accelerated his chemical motor, and he was having difficulty speaking under its great force.

Was their incredible friend still trying to snatch them from disaster? Why should he have increased the acceleration of his ship far beyond normal? Could it be that he was risking all in his determination to reach his friends?

A flood of admiration and gratitude flowed over the three astronauts. Chris was attempting the impossible in order to save them. Who but Chris would do such a thing? For his sake, even more than their own, they prayed that his mission would be successful.

"Where is he?" Tony asked at last.

"Twenty-two and a half thousand miles away," replied Morrey after a brief look at their instrument. "He's coming in fast."

Good for Chris! Maybe he was coming in fast, but would it make any difference? Already the pull of Planet X was beginning to have its effect once more. As the helpless spaceship cruised on around Pluto, its orbit was being stretched out perilously toward the dense, dark intruder. On the next pass Morrey had little doubt but that they would be wrenched away from the protective pull of the sun's outermost satellite.

Meanwhile Chris was streaking nearer. But he still had to turn his ship around and decelerate it so that he could place it in the same orbit as his goal. It would all take time, and time was running out. Could Chris do it?

Morrey's mind went back to a period a few years before when, between space flights, the four astronauts had become interested in automobile racing. They had each been coached by the world's leading drivers, and had had many trials on racetracks. One thing was plain from the start. While it was essential to have a good and reliable car, it was the nerve, skill, and judgment of the driver that won races. When the car was speeding along the straight part of the track at perhaps 180 miles an hour, a corner would loom up. The race was won or lost by the fractions of a second gained by the driver who delayed his braking to the last-possible moment. If he braked too late, he couldn't take the corner and would spin off the track. If his nerves weren't strong and he braked too soon, he would find other, more daring drivers overtaking him.

Though the race in which Chris was engaged was fantastically different from automobile racing, the same principle applied. He would lose valuable time if he turned his ship and braked too soon. But he would crash his ship if the maneuver came too late. Morrey felt a warm glow as he recalled that Chris's calm, iron nerve, and cool judgment had enabled him to win race after race. These qualities would stand him in good stead now. But would they help him to win the greatest race of his life?

The thrust of Pluto Two vanished like magic as Chris, with a supreme effort, cut off the motor. Without even waiting to speak to his friends, he propelled himself over to the array of instruments that would indicate his position and speed.

Twenty-four thousand miles an hour. Gosh! that would take some slowing down. He'd save time on his approach, but had he stepped up his speed too much? At this velocity he would either shoot on past Pluto and wander off into space, or he would be smashed to powder on the planet's rocky surface. A quick glance at the radar assured Chris that his general direction was right. The blip that was Pluto One showed that the damaged ship was much nearer.

Swiftly Chris punched the button that would fire the small lateral rockets. Pluto Two must again travel tail first so that the powerful thrust of the rocket motor would decelerate it. Satisfied, he climbed onto the couch and switched on the ignition. Again he was held down helplessly as the full force of the chemical motor built up. And he hadn't even spoken to his friends!

By dint of great effort, Chris could turn his head just sufficiently to see the ship's chronometer. He'd done a quick calculation and reckoned that he must endure the strain for ten minutes. Then he could shut the motor off again, and—all being well—he should be near the planet and down to orbital velocity. He watched the seconds and minutes pass steadily by.

The ten minutes were up! Ah! He had just made it. The motor was dead and he could get up to look around. At least he hadn't crashed into anything. But how was Pluto One? Was the ship still in its dangerously elongated orbit? He hurried over to the scanner to find out.

Thank God, it was there! The blip was on the screen, indicating that, so far, Morrey and the other two were still safe. Now he must work out his speed and direction so that he could give chase. But first he would let them know that he was on their tail.

"Pluto Two to Pluto One," he called over the radio. "I'm coming in. Get suited up and prepare to abandon ship. I'll get as close as I can."

Chris's plan was to go after Pluto One and to get as close as possible. Then he would order the three astronauts to come out through the airlock and use their jet guns to propel them toward the rescue ship. They should be able to come aboard one by one. Then he would open up the motor to full throttle and tear the ship away from the grasp of Planet X. He explained his proposal to his friends.

Aboard Pluto One, Morrey, Serge, and Tony were listening to Chris's words with relief and a growing hope. It seemed that the amateur racing driver had pulled off another incredible feat by flinging his ship along at breakneck speed and then applying the brakes at the last split second. Even so, there were still many dangers to overcome, particularly when they tried to transfer to Pluto Two. But if all failed, if Chris's stupendous achievement was still unsuccessful, it would be a great comfort to them to know what their friend had attempted for their sakes.

"Take it steady, Chris," Morrey answered after he'd acknowledged the instructions. "Don't let this monster get hold of you."

"Not a chance," the cheerful reply came back. "I haven't had your bad luck. My fuel is ample to get us all back to dear old Earth."

That old Earth would certainly be dear to Tony, Morrey, and Serge. Even though they were always keen to leave it on some space flight or other, they were happier still when they set foot once more on their home planet. This time their joy would know no bounds, for had they not been farther away from it than ever, and hadn't their chance of return seemed to vanish?

"Here he comes!" yelled Tony, pointing to the radar screen. The screen revealed very plainly the proximity of Pluto Two, and the range finder indicated that it was little more than fifty miles away. So the incredible had happened! After crossing four billion miles of space in search of them, Chris had found his friends. But could he bring his ship in close enough for the astronauts to come aboard after they had abandoned their own vessel?

It was Serge who dashed their rising spirits.

"Our velocity is increasing quickly," he announced.

Morrey went over to the instrument and saw at a glance that the attraction of Planet X was drawing their ship along dangerously. It was as if that malevolent body was aware that rescue for its victims was at hand, and it seemed to be making a great effort before it was too late. The three could only watch helplessly as Pluto One was drawn ever faster toward the small, dense planet.

Chris was well aware of what was happening. His own instruments had shown how near he was to his quarry.

But they had also revealed that he was getting no closer. The pull of Planet X must be having an effect on his own ship, but an even greater one on Pluto One, which was nearer to it. He must close the gap quickly.

Unfortunately, to do this meant turning his ship around once more so that the motor would thrust it forward. Valuable time was lost, though Chris's swift, precise actions kept the loss to a minimum. A gentle burst of the chemical motor sped up Pluto Two and sent it scurrying after its objective.

Aboard Pluto One activity was divided between putting on spacesuits, collecting film and records that the crew would take with them, seeing that their jet guns were charged, and keeping an eye on the instruments.

It was Serge's turn to scan the panel of dials. He had his spacesuit on, and his jet gun hung at his side. All he had to do before stepping out through the airlock into the void was to fix his helmet, and this was ready an arm's length away. Morrey was stowing film and tapes into huge pockets in his spacesuit. As leader, it was his duty to see that as many records of their flight as possible were saved. Tony, who'd attended to all their jet guns, was now climbing into his own suit.

"Morrey," Serge said, "we're speeding up a lot. At this rate we'll be leaving Chris behind again."

Morrey paused in his task, and so did Tony. They hurried over to join their friend. It was true. During the last half hour Pluto One's velocity had increased by more than 10 percent. There was no doubt, now, that the ship had been torn from its orbit around Pluto. It must be heading for disaster at an ever-increasing speed—and the crew were unable to do anything about it.

"Better tell Chris," Morrey said grimly, but the pilot of their rescue ship already knew. Before they could report, he spoke.

"I'm blasting right after you before you go too fast," the calm voice of Chris informed them. What a joy it was to hear the matter-of-fact tones of their friend.

Though, of course, he hadn't betrayed it, Chris was getting very worried. There was a limit to how far he could chase the other ship. The faster the two ships went, the more difficult it would be to match their speeds. And it was essential that for at least ten minutes they should be traveling close together at the same velocity. Otherwise it would be impossible for his friends to jump across space to transfer to Pluto Two.

Then there was the question of breaking away from this murderous pull once his friends had come aboard. He couldn't use the nuclear motor, for the concussion would kill them all instantly. They wouldn't have time to get into the fridge and be put to sleep—and this was the only way they could survive the atomic blast-off. The chemical motor had its limits. He prayed that, when he opened it to full throttle, there would be sufficient power to escape the clutches of Planet X.

Chris gave his motor a short run, but still the gap between the two ships was increasing. Savagely he pressed the firing button and held it down.

It was all or bust! He was going to catch up with Pluto One or die in the attempt. Now the gap began to decrease as Chris's ship, under the combined pull of Planet X and the thrust of its own motor, began to overtake the other vessel.

Aboard Pluto One the preparations for abandoning ship were complete. All the records that the crew could take with them were safe, and each astronaut was completely suited. They spoke over their helmet radios as they waited tensely for Chris to approach.

"I can spot him," Tony announced as he looked through a spaceport.

A speck of light that could only be Pluto Two was moving across the field of stars. It was still too far away to be seen clearly, but it was enough to cheer up the astronauts. Rescue was at hand!

"I'm ten miles away," Chris told them, "and I think I'll be as near as I can come in another three minutes. Get here as quickly as you can, because things aren't too healthy. We'll skip away the very moment the airlock closes on the last of you."

The crew of Pluto One called back happily. They were even more anxious than Chris to leave this unhealthy neighborhood. He could depend on it that they wouldn't waste any time in leaving poor old Pluto One to continue its last journey.

"He's coming in fast," Tony reported from the scanner. Even through the spaceport it could be seen that their rescuer was getting closer. Pluto Two was beginning to take a definite shape. They could see that the motor was running at full throttle in the effort to overtake the doomed vessel.

All three astronauts went to wait by the airlock. Serge would leave first, followed by Tony, and finally Morrey. Chris would tell them just when to leave, and his order would be coming at any moment.

"Gosh, I've forgotten something," Tony suddenly burst out, and before Morrey could stop him, he'd left the cabin and started to climb down toward the nuclear motor.

"Come back, Tony," Morrey called out over his radio. "Chris will be telling us to leave any moment."

"It will only take a moment," Tony answered. "If Chris signals abandon ship, you two get out and I'll follow."

Before Morrey could answer, the voice of Chris broke in.

"Come on, and be quick. I can only keep the ships together for a few seconds," he said.

"Come at once, Tony," Morrey thundered. "Never mind what you've forgotten; leave it."

As the leader spoke he signaled Serge to go through the airlock. The Russian obeyed promptly and the door shut behind him.

"Tony," Morrey yelled. "Come here at once. I'm waiting for you to leave."

"Come on. What's keeping you?" Chris called.

"Tony! I order you to come at once!" Morrey spat out. Never had he felt so angry with his friend. The young idiot was putting all their lives in jeopardy. Morrey was torn between the idea of joining Chris and Serge while there was still time and keeping to his traditional duty of being the last to leave his ship. Fortunately Tony reappeared in the cabin at that moment.

Morrey didn't waste time or breath in storming at him. That could come later. He curtly ordered him through the airlock and, without a word, Tony went through. It was only seconds later that Morrey, after a last look around the deserted cabin, stepped through himself.

As they stepped out into space, each of the astronauts gave himself a push away from the doomed ship. Then, with Pluto Two clearly in view, they fired their jet guns to propel them to it.

Would the power in their guns be enough? They must get over to Chris's ship as quickly as possible. But they must keep enough reserve energy in their guns to decelerate them as they reached their objective. Otherwise they would sail on past Pluto Two and wander off, only to be pulled down, eventually, by the murderous attraction of Planet X.

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They had made it! One by one the three astronauts made his way with grotesque gyrations toward the rescue ship. Each slowed down and managed to grab a handrail on the outer casing. And each felt the tremendous surge of relief as they touched the solid metal of Pluto Two.

"Same order inside," Morrey ordered shortly. "Chris, we're coming in."

"Quick as you can," Chris said. "You've taken longer than I expected."

Without losing any time, the three astronauts followed each other into the welcoming interior of Pluto Two. It was a few minutes before they could collect themselves and begin to unfasten their helmets, for each was feeling a tremendous reaction and none of them wanted the others to see it. They hadn't even spoken to Chris, who was bent over his instruments in fierce concentration.

Suddenly they all felt as if a ton of rocks had hit them. They were flattened onto the cabin floor as Pluto Two's motor resumed its struggle to break free from the dense planet.

"He—he might have—let us—get to the c-contour couches," Tony managed to gasp.

"N-not time, thanks to—to you," Morrey grated back.

It was a terribly painful experience, for the cabin floor felt very hard. Even to breathe was a great effort, and movement and speech were almost impossible. As they lay there gasping painfully, Tony wondered what the others were thinking about him. He'd almost cost them their lives, and now he was responsible for the excruciating discomfort they were all feeling. His delay in leaving the doomed spaceship had been all but fatal. Yet he didn't regret his action for a moment.

Sir Billy Gillanders and Whiskers found the suspense almost beyond endurance. Yet they did endure it, for there was nothing else they could do. Signals and messages had come from the two spaceships, and it was plain that Chris was making a titanic effort to reach his friends. The intense gravitational effect of Planet X on the two ships was plain to see, and the computer had almost developed indigestion in trying to devise means of counteracting it. To the observers on Earth it seemed there was only one thing that might overcome the strange planet's deadly pull. And that was human courage.

As the signals came in, the men and women in that long air-conditioned room felt as if they were watching a drama that had taken place long ago, but the outcome of which they did not know. The suspense in Control was excruciating, and Betty and the doctor kept an anxious watch on Sir Billy. One or two of the staff did succumb to emotional stress and toppled from their seats. The minutes crawled by with leaden feet.

"Hey!" "Look at that!" "Great Scott!" and a dozen other expressions of amazement rang out almost simultaneously. They came from the men and women who were monitoring the dramatic events at the edge of the solar system. Something terrible had happened. There had been a tremendous explosion. Radiation came flooding in. Almost before anyone could move, the telephone rang from the nearest observatory. A great flash like an exploding star had been witnessed. And it had come from the very area that they had all been watching anxiously!

Amid the confusion of reports, it was plain that a catastrophe had taken place. Someone likened it to a nova, or exploding star, within the solar system, though of course this was an exaggeration. Yet the explosion was on a scale that staggered the imagination. Certainly nothing like it had ever before been witnessed so close to Earth.

And the effect on Pluto Two? The ship could have been no more than perhaps fifty or sixty thousand miles away. It must have been destroyed by the massive outpouring of energy that had just taken place. The complete cessation of all radio signals seemed to confirm this. Sir Billy and the others were staggered at the fate that must have befallen the four young men. After they had survived such ordeals and were on the point of carry-out a successful rescue operation, it was cruel luck that a major catastrophe in the solar system should have occurred just then. Feelings of utter despair spread among the scores of tired men and women in the control room on Wilingili Island.

Pluto Two was streaking along at an ever-increasing speed. But instead of rushing straight toward Planet X in the wake of its fellow, the ship was being turned gradually away. Chris had decided that even if he could decelerate his vessel and turn it around, it would be too late to save them from destruction. So he fired a batch of lateral rockets in the nose section to turn the ship's path into a great arc.

Fortunately there was still a good deal of power left in the laterals. Some hadn't been used at all, and others had been fired only to turn the ship, or to stop it from doing so. Now Chris set off a whole bank of these powerful little thrusters, and Pluto Two was being nudged away from the sinister planet.

The minutes ticked by. Still the painful pressure continued, with the astronauts pinned uncomfortably on the cabin floor. Chris, in the pilot's seat, could see some instruments in spite of the difficulty he experienced in turning his head. They were sufficient to indicate that Pluto Two was heading away from Planet X at last. On this course the ship would swing into an orbit around Pluto. At that point Chris meant to slacken the pressure and place the ship on a course for Earth. He awaited the moment intently. It came and he flicked a switch.

"Gosh, I feel bruised all over," Tony grumbled as he struggled from the floor. The others, too, were picking themselves up, and could now speak freely.

"What the blazes were you doing?" Morrey thundered. "You nearly ruined everything."

"Sorry," Tony answered, "but there was just one job I had to do before we left old Pluto One."

"In heaven's name, what was it?" Morrey wanted to know.

At that precise moment, the ship's spaceports were all illuminated with a fantastic glare. Something of cosmic proportions had occurred out in space. The crashing of the doomed Pluto One on Planet X couldn't have produced anything like such a flare. Even though the unfortunate ship should be impacting on the dense planet at about that moment, this couldn't be the result. For Chris's ship had swung around the planet Pluto ready for its Earth-bound trajectory, and Planet X would be shielded from view.

The glare lasted several seconds, and the crew shielded their eyes from it.

"What is it?" gasped Serge.

"It's like a monstrous nuclear explosion," Chris declared as they tested to see if their eyes had been damaged. Fortunately they hadn't.

"Let's check the instruments first," suggested Chris.

Every instrument was dead. The radio, too. If what they had witnessed had been a nuclear explosion, it had set up a radiation belt that had effectively blotted out all forms of radio communication. The ship was deaf and blind.

All the astronauts but Chris were still wearing their spacesuits, for there hadn't yet been time to remove them. Morrey dropped over the facepiece of his helmet the special visor that enabled the wearer to face the sun. So protected, he made his way to a spaceport and looked outside.

The planet Pluto almost filled his field of view, but it wasn't the scene that he'd witnessed before. Much of the surface was now obscured by a pink mist, and for a moment Morrey was at a loss to know what this was. The color itself seemed to come from a glow behind the planet, a source of light that hadn't been there before. The mist must be dust clouds illuminated by the new sun that had appeared on the far side of the planet! When the others joined him they agreed that the only explanation was that Planet X had exploded and become a miniature star.

"It must have been the impact of Pluto One," Chris muttered. "But how could the crash of a spaceship set off such a catastrophe?"

Serge and Morrey were equally amazed. Tony remained silent, but it was some minutes before the others noticed. Then Chris looked at him suspiciously.

"Tony, have you any theory about this?" he demanded.

"Well—er—I did set our nuclear motor to go critical just before I left the ship," Tony confessed. "I wanted to give Planet X something in return for what it nearly did to us."

There was a stunned silence. Then Morrey burst out.

"So that's why you were hanging back," he said accusingly, and Tony had to admit that it was. There was a stony silence for a moment, and then Chris spoke.

"We'll discuss this further when we get back," he said sharply.

Control was in an uproar. Incredible things had happened. It seemed that Planet X had completely disintegrated. The flare that they had witnessed had been the funeral pyre of this dangerous intruder. Not only had its influence gone, but the force of its death throes had pushed Pluto back into almost its original orbit. It was only then that Sir Billy Gillanders revealed to his closest colleagues some very secret information that he had been guarding.

It was that the intrusion of Planet X into our solar system was going to be disastrous. Already it had started to destroy the orbit of the outermost planet. Once Pluto had fallen to its intense gravity, the added mass would start to affect the next planet, Neptune. Mathematicians, with the help of their computers, had discovered that this process of mass accretion would continue until all nine planets of the solar system had been absorbed. Then the new superplanet and the sun would be drawn together, resulting in the immediate destruction of both. No doubt some astronomer in some far-distant universe would observe the holocaust.

"Another nova," he would remark as he recorded it in his notebook.

But something had happened out there in space to remove this peril. Had the salvation of the solar system been achieved at the cost of the two spaceships and the four young men that they carried?

Even as this possibility exercised the minds of the scientists in Control, another astounding thing happened. A signal was received from Pluto Two, which was streaking its way back to Earth!

The relief and joy that this produced was not confined to the men and women on the atoll. The world's press, though still unaware of the fate that would have awaited Earth in less than a hundred years, had reported the apparent loss of the rescue ship and all the astronauts. Some papers had even come out with lengthy accounts of the lives of the brave young men. Now the emotion almost amounted to delirium.

"They're on course, too," Sir Billy burst out to his friend Whiskers. It took the training of a lifetime to prevent the ex-officer from breaking down completely.

As the next two weeks went by, Pluto Two maintained a perfect course for Earth. The blips on the radars confirmed that the ship was on its way home, following the same flight path that the unfortunate Pluto One should have taken. And the world waited breathlessly for the return of the astronauts.

Then came the moment when the nuclear motor had finished its job, and the chemical rocket took over for the last stage of the journey. The four young men were restored to life and exchanged the first joyous messages with their friends in Control. Whiskers was almost incoherent, so overwhelming was his relief that his friends had survived. Sir Billy, for the first time, didn't regret his illness, for otherwise the rescue would never have been made.

When Pluto Two went into Earth orbit, there was a celebration in Control, but this was only a warm-up for what would take place when the astronauts touched down. The scientists, technicians, and engineers would go wild when the ordeal was finally over. All the Maldivians too had planned to mark the occasion in their traditional way. Tutu, Sato, and the rest had completely identified themselves with their employers, and would be in ecstasy when Chris and the others returned to the atoll.

So it turned out. Pluto Two, after circling the Earth for six hours, was piloted down to Gan with pinpoint accuracy. The whole exercise was an example of perfect coordination between crew and Control. The ship, scarred from eight billion miles of space, settled majestically on the designated landing pad.

The most fantastic journey that had ever been undertaken was over.

Inside the ship the crew waited impatiently for the required time to pass before it would be safe to leave. They had shaved and freshened up, ready for the first contact with fellow human beings. At last Chris gave the signal for the airlock to be opened, and a great wave of sound met them. It was the heartfelt cheers of many thousands.

In the cool, quiet office of Sir Billy Gillanders, the astronauts were able to relax with their friends. Suddenly Morrey spoke up.

"What's happened to the time-slip?" he asked. "I don't feel any different."

It was true, they had forgotten about this mysterious effect of space travel.

"Our time should be twelve hours different from yours," Tony exclaimed, "but it's the same."

"How do we know?" Sir Billy asked. "Perhaps you've traveled back to our time on your journey home. Perhaps all our times are different, but we only know what we ourselves see and hear.

"Tell me," he went on, "have you any theories as to what caused the destruction of Planet X? Whatever it was, it has saved our solar system."

Three pairs of eyes turned on Tony.

"It was nothing," the mechanic said modestly. "Glad to have been of service."

"What are you going to do now?" Whiskers asked. "Have a wonderful celebration?"

The four young men who had returned safely from the most incredible adventure the world had ever known looked at each other uncomfortably. Chris spoke for all of them.

"That can come after," he said, "first we are going to give thanks to God for our safe return."

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